

# ANNUAL OPERATIONS AND MAINTENANCE REPORT

## YEAR NINE OF THE LONG-TERM PHASE FOR THE SMALL FILLS, YEAR NINE OF THE PUMP AND TREAT PHASE FOR THE NORTH AND SOUTH FILLS

**Sharkey Landfill Superfund Site  
Morris County, New Jersey**

**Prepared for:** Sharkey Landfill Agreement Group  
Technical Committee

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**Project No. 943-6198-002**

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## 1.0 INTRODUCTION

### 1.1 Report Requirements

This Operations and Maintenance (O&M) Report is submitted as required by the Revised Final (100%) Design Report (Golder Associates, 2000), and presents the results of the Annual Monitoring Event for Year Nine of the Long-Term Phase of the Northwest-North Fill / Northwest-South Fill / Southwest Fill (Small Fills), as well as Year Nine of the Pump and Treat Phase for the North and South Fills. The Annual Monitoring Event was conducted by Golder Associates Inc. (Golder Associates) in April 2012 and June 2012. Results of water level (hydraulic) monitoring are not included with this report, as they are now currently managed by the Township of Parsippany-Troy Hills.

Sections E.10 and E.12 of the Statement of Work (SOW) outline the requirements of the Long-Term Phase of the Small Fills. Specifically, Golder Associates collected samples from the ten (10) groundwater monitoring wells on the Small Fills and each of the six (6) surface water stations in the Whippany River (i.e., W1(U), W2(U), W3(D), W4(U), W5(UD) and W6(D)). Golder Associates also collected two composite samples from the groundwater extraction system (GWES) for the North and South Fills during April 2012 and June 2012.

The groundwater and surface water sampling was conducted from April 11, 2012 through April 12, 2012 and on June 7, 2012. The groundwater samples were analyzed for the Target Compound List (TCL) list (Exhibit A of the SOW), including the Well Chemicals (WC) list (Exhibit B of the SOW) and the surface water samples were analyzed for the TCL list, including the River Chemicals (RC) list (Exhibit C of the SOW).

The monitoring program for the Annual Monitoring Event, Year Nine of the Long-Term Phase for the Small Fills and Year Nine of the Pump and Treat Phase for the North and South Fills, was performed in accordance with Appendices B and C, *Performance Monitoring Field Sampling and Quality Assurance Plan for the Remedial Action (PMP)* and *Health and Safety/Contingency Plan for Operation and Maintenance Activities*, respectively, of the Revised O&M Plan (Golder Associates, 2005), and with the SOW, Appendix B of the Consent Decree. This report is submitted, as required, to both the United States Environmental Protection Agency (USEPA) and the New Jersey Department of Environmental Protection (NJDEP).

### 1.2 Project Background

The Sharkey Landfill Superfund Site (Site) is located in the Townships of Parsippany-Troy Hills and East Hanover, in Morris County, New Jersey. The Site is bounded by Route 46, New Road, and the Rockaway River and extends south beyond Interstate Route 280 between Troy Meadows and the Hatfield Swamp.



The landfill Site is approximately 90 acres in size and is divided into five separate landfill areas: the North Fill, South Fill, Northwest-North Fill, Northwest-South Fill, and Southwest Fill.

In September 1983, the Sharkey Landfill Site was included on the National Priorities List as a result of assumed impacts from historic fill material. Various contractors for the NJDEP conducted a remedial investigation and feasibility study (RI/FS) through July 1986. The results of the RI/FS indicated the presence of low concentrations of organic (including pesticides) compounds and inorganic compounds in soils, and low concentrations of organic and inorganic compounds in the shallow water beneath the Site. The shallow water bearing zone beneath the Site that is referenced throughout this report ("shallow groundwater") is isolated both vertically and horizontally. As concluded in the RI, the shallow groundwater is isolated from deeper groundwater systems by a confining varved clay layer which is continuous across the Site and beneath the Fill areas. The shallow groundwater beneath the Fill areas immediately discharges into the adjacent Rockaway and Whippany Rivers, which form hydraulic barriers for the lateral migration of the water beneath the Fill areas; hence the shallow water beneath the Site is isolated vertically and horizontally from regional groundwater systems.

Based on the results of the RI, the USEPA and NJDEP established cleanup goals and objectives for the Site. The USEPA selected a remedy to accomplish these goals, which is presented in the Record of Decision (USEPA, 1986).

The USEPA modified the selected remedy and notified the public in the Explanation of Significant Differences (USEPA, 1993). The Consent Decree, issued by USEPA in 1994, outlines the responsibilities of the Group, the Township of Parsippany-Troy Hills, and others for remedial design, remedial action (RA), and Operations & Maintenance (O&M).

The SOW, included as Appendix B to the Consent Decree, provides explicit details about the shallow groundwater monitoring, surface water monitoring (collectively referred to as "monitoring"), and reporting requirements that are required during the O&M phase of the project. Specifically, the O&M requirements are provided in Sections E.10 through E.15 of the SOW. These sections provide separate criteria for shallow groundwater versus surface water, and North and South Fills versus the Small Fills. These sections also break down the O&M into the different phases of work (First Baseline, 5-Year Pump and Treat, Second Baseline, and Long-Term). The SOW Appendices also list the analytical parameters that must be sampled and tested for during the O&M phase, and the Well and River Trigger Levels that will be used to evaluate the effectiveness of the remedy. In accordance with a letter received from the USEPA dated July 20, 2005, the analytical sampling frequency at the Small Fills was modified to annual.

The First Baseline Phase for the North and South Fills was completed in 2002. For the First Baseline Phase, the groundwater at the Site showed only two exceedances of the Well Trigger Levels prior to start-



up of the GWES system. During the sampling events of the First Baseline Phase, several parameters exceeded the River Trigger Levels. These parameters were not believed to be associated with the landfill areas, and none of these exceedances were considered Trigger events. These initial sampling results continued to indicate that there does not appear to be elevated levels of the constituents of concern at the Site.

On April 21, 2005, the Group petitioned the USEPA within its rights under the Consent Decree to modify the SOW O&M requirements on the Small Fills. The USEPA responded and agreed to the requested modifications to the O&M requirements on in a letter dated July 20, 2005. As per the modified O&M requirements, the groundwater and surface water monitoring has been conducted on an annual basis. The hydraulic monitoring became the responsibility of the Township of Parsippany-Troy Hills in 2003. In 2008, the Township requested that the groundwater extraction system on the North and South Fills be turned off and the Township has indicated that it has or will redevelop the monitoring wells on the North and South Fills in anticipation of the Second Baseline Phase for the North and South Fills.

The 5-Year PT Phase for the North and South Fills was completed in 2007. There were no exceedances of the Well Trigger Levels at the Site in the composite samples collected as part of the 5-Year Pump and Treat Phase of the North and South Fills. These sampling results also continued to indicate that there does not appear to be elevated levels of the Site constituents of concern in the North and South Fills. Also, based on the results of the shallow groundwater level monitoring conducted in 2003, 2004, and 2005, the GWES system at the North and South Fills appeared to be effective in achieving hydraulic capture of the shallow groundwater by reducing the overall shallow groundwater elevations at the Site.

The First Baseline Phase for the Small Fills was completed in 2003, and Years One through Eight of the Long-Term Phase for the Small Fills were completed in 2004 through 2011, respectively. There were no exceedances of the Well Trigger Levels at the Site in the 2003, 2004, and 2006 through 2011. In 2005, there was an exceedance of the Well Trigger Level for Mercury in one well on the Southwest Fill. However, it is not believed that the mercury result constitutes a trigger level exceedance because laboratory contamination of the sample was suspected, the historical results for the particular well and all other shallow groundwater monitoring wells in the Small Fills have been non-detect for mercury, and the resampling that was conducted at the well was non-detect for mercury. Bromodichloromethane exceeded the River Trigger Level in various surface water stations on several occasions in 2003, 2004, 2005, and 2006. However, bromodichloromethane is not believed to be associated with the landfill areas, and none of these exceedances are considered Trigger events. In 2007, acrylonitrile was detected at W-1(U), the furthest upstream sampling location, and not at any of the downstream locations; therefore, it was unlikely that the exceedance was associated with the landfill areas, and as such did not constitute a trigger level exceedance. There were no exceedances of the River Trigger Levels in 2008 through 2011.



## 2.0 ANNUAL MONITORING EVENT, YEAR NINE OF THE LONG-TERM PHASE FOR THE SMALL FILLS AND YEAR NINE OF THE PUMP AND TREAT PHASE FOR THE NORTH AND SOUTH FILLS

### 2.1 Water Quality Monitoring Program

#### 2.1.1 Groundwater

All groundwater sample references throughout this report refer to the shallow water bearing zone beneath the Site. During the Annual Monitoring Event, Year Nine of the Long-Term Phase for the Small Fills, Golder Associates collected groundwater samples from:

- Three (3) monitoring wells on the Northwest-North Fill (M-17, M-18, and M-26);
- Four (4) monitoring wells on the Northwest-South Fill (M-19A, M-20, M-21, and M-22); and,
- Three (3) monitoring wells on the Southwest Fill (M-23, M-24, and M-25)<sup>1</sup>.

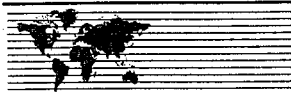
The groundwater samples were analyzed for the TCL list (Table 2 and Exhibit A of the SOW), including the WC list (Table 3 and Exhibit B of the SOW). The sample point identifications, sampling dates and parameters analyzed are summarized in Table A-1 of Appendix A.

All groundwater samples were collected using the USEPA Region II low-flow purging and sampling method (USEPA, 1998), in accordance with the PMP (Appendix B of the O&M Plan). The wells were purged at a rate of approximately 0.3 liters per minute with permanently installed, dedicated, pneumatic (Well Wizard™) bladder pumps. Water levels were monitored using an electronic water level meter and the pumping rate was maintained unless water level drawdown was observed, at which time the rate was reduced to maintain the initial water level as much as reasonably practicable. The wells were purged until the field parameters of temperature, pH, oxidation-reduction potential (ORP), turbidity, conductivity, and dissolved oxygen (DO) stabilized over a minimum of three consecutive readings measured in a flow-through cell at approximate 5-minute intervals. These data were recorded on the Sample Collection Forms. Stabilization was considered complete when at least one discharge tubing volume was purged, and the three consecutive readings agreed within the following criteria:

- $\pm 0.1$  standard units for pH;
- $\pm 10$  mV for ORP; and,
- $\pm 10\%$  for temperature, conductivity, turbidity and DO.

Once the parameters stabilized, the flow-through cell was disconnected and the groundwater sample was collected directly from the Teflon™-lined tubing dedicated to each Well Wizard™. The pre-preserved sample bottles were then filled and transported to the analytical lab in accordance with the PMP.

<sup>1</sup> Each sample point was assigned a unique identification number pursuant to Section 2.3.3 of the PMP. All subsequent references to samples in this report are made using these designations.



A summary of the stabilized field measurements (i.e., pH, specific conductance, DO, ORP, turbidity and temperature) is presented in Table 1. Appendix B provides a summary of detected compounds for the Annual Monitoring Event, Year Nine of the Long-Term Phase for the Small Fills.

In addition to the primary groundwater samples, the following quality control (QC) samples were collected in accordance with the PMP:

- One (1) field duplicate sample
- One (1) matrix spike/matrix spike duplicate (MS/MSD)
- One (1) trip blank

The QC samples were collected in the field and submitted to the analytical laboratory for analysis along with the primary samples.

### **2.1.2 Surface Water**

Golder Associates collected samples from each of the six surface water stations in the Whippany River (i.e., W1(U), W2(U), W3(D), W4(U), W5(U/D) and W6(D)). The samples were analyzed for the TCL list (Table 2 and Exhibit A of the SOW), including the RC list (Table 4 and Exhibit C of the SOW). The sample point identifications, sampling dates and parameters analyzed are summarized in Table A-1 of Appendix A.

Samples were collected using a sampling vessel (e.g., extendable pole with an attached tri-pour beaker) as the Whippany River had a noticeable flow and was too deep at surface water station W6-D, which made wading into the river not possible at the time of sample collection. Golder Associates collected the samples by facing upstream, immersing the sampling vessel into the water, and then filling the sample containers from the sampling vessel taking care to not overflow the bottle resulting in loss of preservative. A low velocity area was chosen because high water velocity can cause the re-suspension of bottom deposits and bias the sample results. Disturbance of bottom sediments can also cause false field parameter readings. Prior to sample collection, the water-quality meter (Horiba-U22®) probe was placed into the water adjacent to each sampling station and the field parameters (temperature, pH, specific conductivity, turbidity, ORP and DO) were measured and recorded on the Sample Collection Form. A summary of the field measurements is presented in Table 1.

The samples were collected so that the preservatives were not displaced from pre-preserved sample containers, such as the 40-ml volatile organic compound (VOC) vials. Immediately after sample collection, sample bottles were placed in a cooler with wet ice and the COC form completed and included with the cooler. The samples were maintained at approximately 4°C and transported to the analytical laboratory in accordance with the PMP.



In addition to the primary surface water samples, the following quality control (QC) samples were collected in accordance with the PMP:

- One (1) field duplicate sample
- One (1) MS/MSD
- One (1) trip blank
- One (1) rinsate blank

The QC samples were collected in the field and submitted to the analytical laboratory for analysis along with the primary samples. Appendix B provides a summary of detected compounds for the Annual Monitoring Event, Year Nine of the Long-Term Phase for the Small Fills.

### **2.1.3 North and South Fill Composite Samples**

Golder Associates collected a composite groundwater sample from the GWES system for each of the North and South Fills on April 11, 2012 through April 12, 2012 and June 7, 2012. These samples were analyzed for TCL chemicals (Exhibit A of the SOW).

The composite sample collected on April 11, 2012 and April 12, 2012 from the groundwater extraction system were collected by isolating the extraction system for one of the Large Fills (i.e., North or South) and opening the valve at the S-6 extraction well. The piping was purged for one hour to remove the stagnant water in the line, and then the water was allowed to slowly run into each sample vial. The composite samples were collected from the S-6 extraction well in error. It was determined that the North Fill sample collected from the S-6 extraction well was a representative composite sample of the North Fill as the GWES was isolated prior to sampling and the S-6 extraction well is located just south of the North Fill. The South sample collected on April 12, 2012 is not considered a representative sample of the South Fill. The South sample is considered a S-6 sample as the S-6 extraction well is located at northern end of the South Fill and is not reported herein.

The South Fill composite sample from the groundwater extraction system was collected on June 7, 2012 by isolating the extraction system for the South Fills and opening the valve at the valve pit at FM-3 located along Sharkey Road. The piping was purged for one hour to remove the stagnant water in the line, and then the water was allowed to slowly run into each sample vial.

These samples were analyzed for the volatile, semi-volatile, pesticide/polychlorinated biphenyls (PCBs), and inorganic compounds on the TCL of Exhibit A of the SOW. The sample bottles were preserved, and transported to the analytical laboratory in accordance with the PMP.

In addition to the primary groundwater samples, the following quality control (QC) samples were collected in accordance with the PMP:





- One (1) field duplicate sample
- One (1) MS/MSD
- Two (2) trip blanks

The QC samples were collected in the field and submitted to the analytical laboratory for analysis along with the primary samples in accordance with the PMP. Appendix C provides a summary of detected compounds for the Annual Monitoring Event, Year Nine of the Pump and Treat Phase for the North and South Fills.

## 2.2 Analytical Parameters and Methodologies

The complete list of analytical parameters required as part of the Annual Monitoring Event, Year Nine of the Long-Term Phase for the Small Fills and Year Nine of the Pump and Treat Phase for the North and South Fills is presented in Tables 2, 3, and 4. These parameters can be subdivided into the following general groups:

- TCL Chemicals (VOCs, semi-volatile organic compounds (SVOCs), inorganics, and pesticides/polychlorinated biphenyls (PCBs))
- Well Chemicals (VOCs, SVOCs, and inorganics)
- River Chemicals (VOCs)
- Field Parameters

CompuChem of Cary, North Carolina performed all of the analyses in accordance with the PMP. The organic parameters (VOCs, SVOCs, pesticides, and PCBs) were analyzed in accordance with the USEPA Contract Laboratory Program (CLP) *Statement of Work for Organics Analyses Multi-Media, Multi-Concentration Organics Analysis, SOM01.2* with the exception of VOCs for the surface water samples. Inorganics were analyzed using CLP *Statement of Work for Inorganics Analyses Multi-Media, Multi-Concentration, ILM05.4*. Golder Associates<sup>2</sup> analyzed the field parameters during sampling in accordance with the PMP.

The surface water VOCs were analyzed in accordance with the USEPA CLP *Statement of Work Statement of Work for Organics Analyses Multi-Media, Multi-Concentration Organics Analysis Trace Volatile Organic Compounds, SOM01.2* using a 25 mL purge volume to achieve detection limits low enough to meet the volatile compound River Trigger Levels. As part of the River Chemicals list, the surface water samples were also analyzed for three additional volatile compounds: acrolein, acrylonitrile, and 2-chloroethyl vinyl ether in accordance with USEPA SW846 *Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS), Method 8260B*.

<sup>2</sup> Golder Associates is NJDEP certified laboratory #03027.



## 2.3 Data Validation

Golder Associates validated 100% of the analytical data collected during the Annual Monitoring Event, Year Nine of the Long-Term Phase for the Small Fills and Year Nine of the Pump and Treat Phase for the North and South Fills pursuant to the PMP. The data was validated for precision, accuracy, representativeness, comparability, and completeness (collectively known as "PARCC") using the criteria specified in the PMP, the Region II data validation guidelines defined below, and the individual analytical methodologies.

Data validation was performed in accordance with the following Region II Standard Operating Procedures (SOPs) and the individual methods listed in Tables B-7 through B-9 of the PMP:

- HW-33, Revision 1 – USEPA Contract Laboratory Program (CLP) Statement of Work (SOW) for Organic Analysis of Low/Medium Concentration of Volatile Organic Compounds SOM01.2, August 2007;
- HW-34, Revision 1 – USEPA CLP SOW for Organic Analysis of Trace Concentration of Volatile Organic Compounds SOM01.2, August 2007;
- HW-35, Revision 1 – USEPA CLP SOW for Organic Analysis of Low/Medium Concentration of Semivolatile Organic Compounds by SOM01.2, August 2007;
- HW-36, Revision 1 – USEPA CLP SOW for Organic Analysis of Low/Medium Concentration of Pesticide Organic Compounds SOM01.2, August 2007;
- HW-37, Revision 1 – USEPA CLP SOW for Organic Analysis of Low/Medium Concentration of Aroclor Organic Compounds SOM01.2, August 2007;
- HW-2, Revision 13 – Validation of Metals for the Contract Laboratory Program (CLP) based on SOW ILM05.3, September 2006; and,
- HW-24, Revision 2 – Validating Volatile Organic Compounds by SW-846 Method 8260B, October 2006.

Collectively, these documents are referred to as the functional guidelines. The results of the data validation are discussed in detail in the Data Validation Narrative in Appendix A. In general, the PARCC criteria specified in the PMP were achieved for all methods used to analyze the samples collected as part of the Annual Monitoring Event, Year Nine of the Long-Term Phase for the Small Fills and Year Nine of the Pump and Treat Phase for the North and South Fills. Any deficiencies noted during validation and the qualifiers that were applied to the data are summarized in the tables in Appendix A.

Following data validation, the analytical data and corresponding qualifiers were summarized for each sample point. These qualified results are provided in the Summary of Validated Data Tables, which are located in Appendix B. In accordance with the SOW, the results were compared to the applicable trigger levels specified in Exhibits A, B, and C of the SOW (Tables 3 and 4 of this report, respectively), which are discussed in Section 2.4 of this report.



The data validation results indicate that all of the data are acceptable, with a few exceptions as further discussed in Appendix A. In some cases the data required qualification due to quality control criteria not being achieved. However, in general, the data are deemed usable for the objectives of the O&M monitoring program.

## 2.4 Water Quality Monitoring Results

Summaries of analyte detections for the samples collected at the Site during the Annual Monitoring Event, Year Nine of the Long-Term Phase for the Small Fills and Year Nine of the Pump and Treat Phase for the North and South Fills are included in Appendices B and C. The summary tables for each sample point, which are grouped by analytical method, sample matrix and site location, contain the following information:

- Detected Constituents – List of constituents that were detected in any monitoring point, along with the reported concentration;
- Qualifiers – The qualifiers that were applied to the results either by the laboratory or by Golder Associates following data validation;
- Units – The units that are associated with each analytical result; and,
- Trigger Level – The analytical results are compared to the Trigger levels, which are located in Exhibits A, B and C of the SOW. Exceedances of the Trigger levels are shown by boldface type and underlining.

The table header contains the following information: sample identification number and date of sample collection.

### 2.4.1 Exceedances of Well Trigger Levels<sup>3</sup>

The three specific Trigger events, i.e., the Type A Trigger, the Type B Trigger, and the Type C Trigger, are designed to identify when contaminants are migrating out of one or more Fill areas at levels which would necessitate activation of the groundwater extraction system at one or more Fill areas (or portions thereof as approved in writing by USEPA). The Type A and Type C Triggers are described in this section. The Type B Trigger is explained in Section 2.4.2 below.

A "Type A Trigger" would occur, for the purposes of the SOW, when any analysis of any sample taken from any groundwater monitoring well at the Site indicates that the concentration of any Well Chemical is greater than or equal to two times the Well Trigger Level set for that Well Chemical. Groundwater extraction shall be initiated at all groundwater extraction wells associated with the groundwater extraction zones responsible for the exceedance within a USEPA-approved timeframe. Another sample may be obtained, which can be analyzed and the results reported to USEPA, within the aforementioned USEPA-approved timeframe, for consideration in determining the need for initiation of such groundwater extraction.

<sup>3</sup> The portions of Sections 2.4.1 and 2.4.2 that explain the Trigger types were taken verbatim from Appendix B of the SOW.



A "Type C Trigger" would occur, for the purposes of the SOW, whenever the concentration of any Well Chemical in groundwater, averaged over the groundwater monitoring well in any groundwater extraction zone, is equal to or greater than its respective Well Trigger Level.

There were no Type A or Type C Trigger Level exceedances during the Annual Monitoring Event, Year Nine of the Long-Term Phase for the Small Fills and Year Nine of the Pump and Treat Phase for the North and South Fills, as presented on Figure 1 and in tabular format in Appendix B.

#### **2.4.2 Exceedances of River Trigger Levels**

A "Type B Trigger" would occur, for the purposes of the SOW, whenever a) the concentration of a River Chemical at any station located within one-quarter (1/4) mile downstream from any Fill area, or portion thereof ("the downstream location"), in either the Whippany River or the Rockaway River exceeds the River Trigger Level for that Chemical, and either of the following exists: b.1) the concentration of the River Chemical at an upstream location is less than the River Trigger Level; or, b.2) the concentration of a River Chemical at both the upstream and downstream locations are above the River Trigger Level but the downstream concentration is statistically greater than the upstream concentration. The statistical analysis to be used to determine if "the downstream concentration is statistically greater than the upstream concentration" stated in b.2) above shall be a methodology selected by USEPA (or a methodology proposed by the Settling Defendants and consistent with 40 CFR 264.90 through 264.99, approved by EPA).

There were no Type B Trigger Level exceedances during the Annual Monitoring Event, Year Nine of the Long-Term Phase for the Small Fills, as presented on Figure 1 and in tabular format in Appendix B.



### **3.0 CONCLUSIONS**

Sampling, analysis, and validation of shallow groundwater and surface water samples from the Sharkey Landfill Site as part of the Annual Monitoring Event for Year Nine of the Long-Term Phase for the Small Fills and Year Nine of the Pump and Treat Phase for the North and South Fills were performed in accordance with the Revised O&M Plan and the SOW, Appendix B of the Consent Decree. The primary purpose of the monitoring is to provide the data necessary to assess the future effectiveness of the required Remedial Action O&M phase at the Site. Sampling results from the Annual Monitoring Event for Year Nine of the Long-Term Phase for the Small Fills and Year Nine of the Pump and Treat Phase for the North and South Fills indicate that there do not appear to be elevated levels of the Site constituents of concern that would require installation of the groundwater extraction system at the Small Fills.

#### **3.1 Data Quality and Acceptability**

The data validation performed on the sample results from the Annual Monitoring Event for Year Nine of the Long-Term Phase for the Small Fills and Year Nine of the Pump and Treat Phase for the North and South Fills indicates that all of the data, with the exception of few parameters, are acceptable. However, some sample results required qualification due to non-conformance to the requirements of the method or the functional guidelines, as noted in Appendix A.

All sample results that required qualification was performed in accordance with the functional guidelines and are summarized in Tables A-1 and A-2.

#### **3.2 Water Quality**

There were no exceedances of the Well Trigger Levels or River Trigger Levels at the Site in the Annual Monitoring Event for Year Nine of the Long-Term Phase for the Small Fills and Year Nine of the Pump and Treat Phase for the North and South Fills. In summary, these sampling results indicate that there do not appear to be elevated levels of the Site constituents of concern in the Small Fills or the North and South Fills.

#### **3.3 Future Monitoring Schedule**

In December 2008, the Township of Parsippany-Troy Hills petitioned the USEPA to turn off the groundwater extraction system at the North Fill and South Fill. Pending USEPA review, the system may be turned off, in which case Second Baseline Sampling of the North and South Fills, Whippany River and Rockaway River will be conducted. If the system is not turned off, the next analytical sampling event for the Small Fills and the North and South Fills is scheduled to occur in Spring 2013. The hydraulic monitoring, which is now the responsibility of the Township of Parsippany-Troy Hills, will continue to be monitored twice per quarter.



## 4.0 REFERENCES

- Golder Associates Inc., February 1996. "Preliminary (35%) Design Report, Sharkey Landfill, Morris County, New Jersey."
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**SUMMARY OF FIELD PARAMETER STABILIZATION DATA  
ANNUAL MONITORING EVENT, YEAR NINE OF THE LONG TERM PHASE FOR THE SMALL FILLS  
SHARKEY LANDFILL  
MORRIS COUNTY, NEW JERSEY**

Field Parameters									
Well ID	Date Sampled	Temperature [° C]	pH [std]	Specific Conductance [mS/cm]	Turbidity [ntu]	Dissolved Oxygen [mg/l]	Redox Potential [mV]	Depth to Water [ft-btoc]	Notes
M-17	4/11/12	9.71	6.71	0.960	11.1	0.00	-128	6.44	MS/MSD Collected
M-18	4/11/12	12.32	6.77	0.940	117.0	0.09	-79	7.06	
M-19A	4/12/12	14.26	7.08	1.32	25.3	0.00	-131	12.39	
M-20	4/12/12	15.88	6.54	2.04	27.5	0.00	-98	14.72	
M-21	4/12/12	15.46	7.69	1.91	0.0	0.00	-134	15.21	
M-22	4/12/12	12.86	8.12	0.972	0.0	0.00	-168	11.31	FD Collected
M-23	4/12/12	11.63	6.16	1.25	9.0	0.00	-86	11.18	
M-24	4/12/12	11.95	6.68	0.603	8.4	0.00	-83	7.11	
M-25	4/12/12	11.95	6.54	0.808	17.1	0.00	-109	9.23	
M-26	4/11/12	12.74	6.80	0.637	11.2	0.90	-60	8.88	
Surface Water Point	Date Sampled	Temperature [° C]	pH [std]	Specific Conductance [mS/cm]	Turbidity [ntu]	Dissolved Oxygen [mg/l]	Redox Potential [mV]	Sample Depth	Notes
W1 (U)	4/12/12	12.99	7.76	0.738	719	11.37	75	0 - 6'	FD Collected
W2 (U)	4/12/12	12.73	7.65	0.774	307	11.11	39	0 - 6'	
W3 (U)	4/12/12	12.29	7.53	0.742	963	10.87	54	0 - 6'	
W4 (U)	4/12/12	11.72	7.79	0.734	182	10.48	-86	0 - 6'	
W5 (U/D)	4/12/12	11.59	7.57	0.699	297	10.42	35	0 - 6'	MS/MSD Collected
W6 (D)	4/12/12	11.15	7.49	0.749	635	10.14	53	0 - 6'	

Table by: JWL  
Table QC'd by: TGS

Date: 4/19/12  
Date: 4/19/12

## Notes

1. The depth to water was measured during synoptic round on 4/11/2012.
2. Stream gauge present but unreadable at W-5(U/D), which is the only stream gauge present.



**TABLE 2**  
**SOW TARGET COMPOUND LIST / TARGET ANALYTE LIST**  
**SHARKEY LANDFILL**  
**MORRIS COUNTY, NEW JERSEY**

<b><u>Volatiles</u></b>		
Chloromethane,	2-Butanone,	4-Methyl-2-pentanone,
Bromomethane,	1,1,1-Trichloroethane,	2-Hexanone,
Vinyl chloride,	Carbon tetrachloride,	Tetrachloroethene,
Chloroethane,	Bromodichloromethane,	Toluene,
Methylene chloride,	1,2-Dichloropropane,	1,1,2,2-Tetrachloroethane,
Acetone,	cis-1,3-Dichloropropene,	Chlorobenzene,
Carbon disulfide,	Trichloroethene,	Ethylbenzene,
1,1-Dichloroethene,	Dibromochloromethane,	Styrene,
1,1-Dichloroethane,	1,1,2-Trichloroethane,	Xylenes (total)
1,2-Dichloroethene (total)	Benzene,	1,3-Dichlorobenzene,
Chloroform,	trans-1,3-Dichloropropene,	1,4-Dichlorobenzene,
1,2-Dichloroethane,	Bromoform,	1,2-Dichlorobenzene,
		1,2,4-Trichlorobenzene
<b><u>Semi-volatiles</u></b>		
Phenol,	2,4,6-Trichlorophenol,	Hexachlorobenzene,
bis(2-Chloroethyl)ether,	2,4,5-Trichlorophenol,	Pentachlorophenol,
2-Chlorophenol,	2-Chloronaphthalene,	Phenanthrene,
2-Methylphenol,	2-Nitroaniline,	Anthracene,
2,2'-oxybis(1-Chloropropane,	Dimethylphthalate,	Carbazole,
4-Methylphenol,	Acenaphthylene,	Di-n-butylphthalate,
N-Nitroso-di-n-propylamine,	2,6-Dinitrotoluene,	Fluoranthene,
Hexachloroethane,	3-Nitroaniline,	Pyrene,
Nitrobenzene,	Acenaphthene,	Butylbenzylphthalate,
Isophorone,	2,4-Dinitrophenol,	3,3'-Dichlorobenzidine,
2-Nitrophenol,	4-Nitrophenol,	Benzo(a)anthracene,
2,4-Dimethylphenol,	Dibenzofuran,	Chrysene,
bis(2-Chloroethoxy)methane,	2,4-Dinitrotoluene,	bis(2-Ethylhexyl)phthalate,
2,4-Dichlorophenol,	Diethylphthalate,	Di-n-octylphthalate,
Naphthalene,	4-Chlorophenyl-phenyl ether,	Benzo(b)fluoranthene,
4-Chloroaniline,	Fluorene,	Benzo(k)fluoranthene,
Hexachlorobutadiene,	4-Nitroaniline,	Benzo(a)pyrene,
4-Chloro-3-methylphenol,	4,6-Dinitro-2-methylphenol,	Indeno(1,2,3-cd)pyrene,
2-Methylnaphthalene,	N-Nitrosodiphenylamine,	Dibenz(a,h)anthracene,
Hexachlorocyclopentadiene,	4-Bromophenyl-phenyl ether,	Benzo(g,h,i)perylene
<b><u>Pesticides/Aroclors</u></b>		
alpha-BHC,	Endrin,	gamma-Chlordane,
beta-BHC,	Endosulfan sulfate,	Toxaphene,
delta-BHC,	4,4'-DDD,	Aroclor-1016,
delta-BHC (Lindane),	Endosulfan II,	Aroclor-1221,
Heptachlor,	4,4'-DDT,	Aroclor-1232,
Aldrin,	Methoxychlor,	Aroclor-1242,
Heptachlor epoxide,	Endrin ketone,	Aroclor-1248,
Endosulfan I,	Endrin aldehyde,	Aroclor-1254,
Dieldrin,	alpha-Chlordane,	Aroclor-1260
4,4'-DDE,		

**TABLE 2**  
**SOW TARGET COMPOUND LIST / TARGET ANALYTE LIST**  
**SHARKEY LANDFILL**  
**MORRIS COUNTY, NEW JERSEY**

<b><u>Analytes</u></b>		
Aluminum,	Cobalt,	Potassium,
Antimony,	Copper,	Selenium,
Arsenic,	Iron,	Silver,
Barium,	Lead,	Sodium,
Beryllium,	Magnesium,	Thallium,
Cadmium,	Manganese,	Vanadium,
Calcium,	Mercury,	Zinc,
Chromium,	Nickel,	Cyanide

Source: Taken from the Sharkey Landfill SOW, Exhibit A

**TABLE 3**  
**SOW WELL CHEMICALS AND WELL TRIGGER LEVELS**  
**SHARKEY LANDFILL**  
**MORRIS COUNTY, NEW JERSEY**

Well Chemical	Well Trigger Level (ppb)
Total VOCs	1000
Benzene: Rockaway River	50
Whippany River	100
bis(2-Ethylhexyl)phthalate	100-299 <sup>(a)</sup> 300 <sup>(a)</sup>
N-Nitrosodiphenylamine	10
Arsenic	50
Cadmium	10
Chromium	50
Lead	50
Mercury	2
Silver	50
Selenium	10
Barium	1000

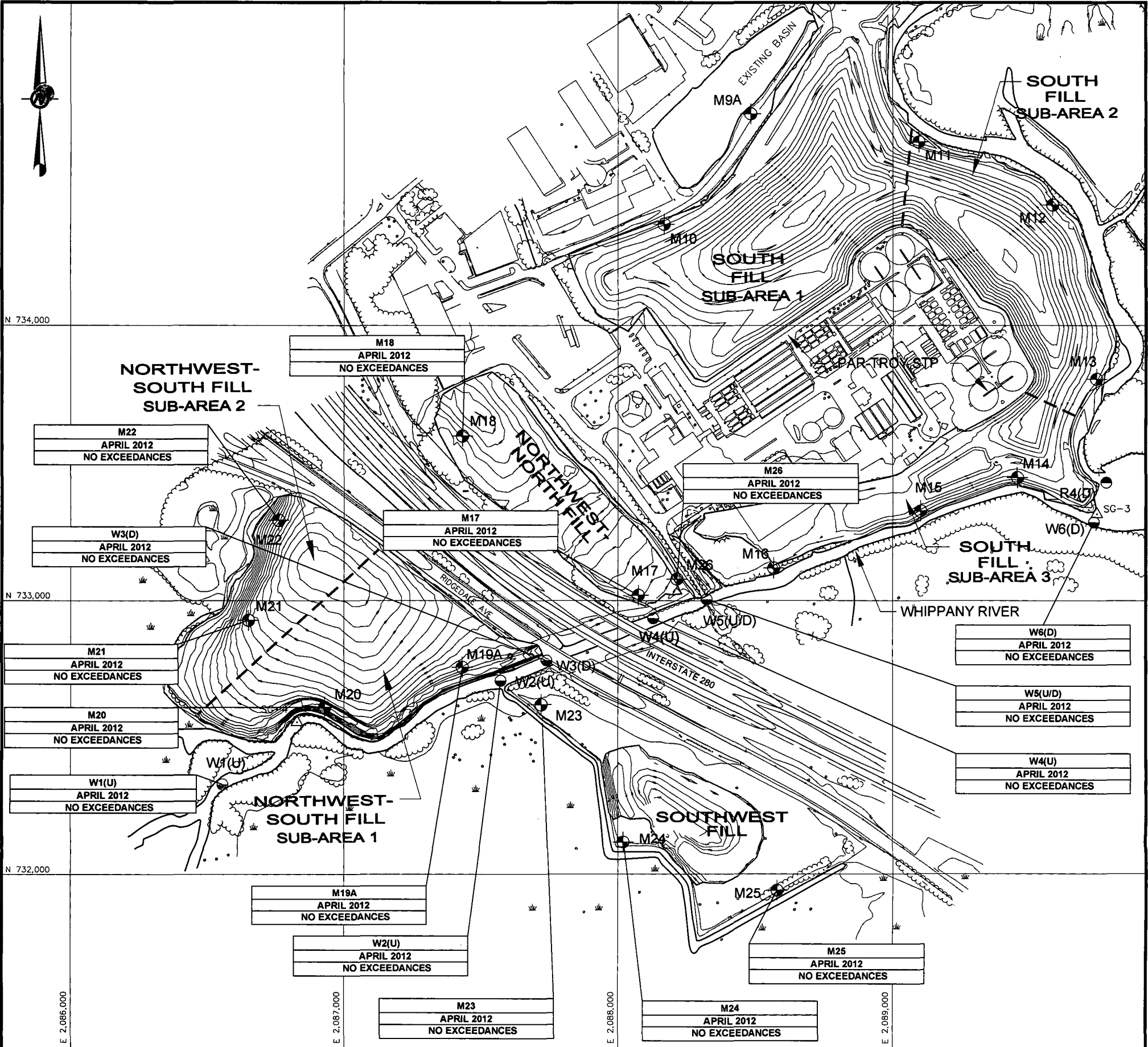
<sup>(a)</sup> If concentrations of bis(2-Ethylhexyl)phthalate between 100 and 299 are detected in any GWM well, an evaluation program to determine the impact of bis(2-Ethylhexyl)phthalate on the associated rivers will be initiated. Any concentrations greater than or equal to 300 ppb shall cause the initiation of the GWE program as outlined in the Section E.13 of the SOW.

Source: Taken from the Sharkey Landfill SOW, Exhibit B.

**TABLE 4**  
**SOW RIVER CHEMICALS AND RIVER TRIGGER LEVELS**  
**SHARKEY LANDFILL**  
**MORRIS COUNTY, NEW JERSEY**

River Chemicals	River Trigger (ppb)	PQL* (ppb)
Acrolein	320	50
Acrylonitrile	0.059	8
Benzene	1.2	1
Bromoform	4.3	1
Chlorobenzene	680	1
Chlorodibromomethane	0.41	1
2-Chloroethylvinyl ether	-	5
Chloroform	5.7	1
Carbon tetrachloride	0.25	1
Dichlorobromomethane	0.27	1
1,2-Dichlorobenzene	2700	1
1,3-Dichlorobenzene	400	1
1,4-Dichlorobenzene	400	1
1,2-Dichloroethane	0.38	1
1,1-Dichloroethane	-	1
1,1-Dichloroethylene	0.57	1
1,2-Dichloropropane	0.52	1
1,3-Dichloropropylene	10	5
Ethylbenzene	3100	1
Methyl bromide	48	1
Methyl chloride	5.7	1
Methylene chloride	4.7	2
1,2-trans-Dichloroethylene	700	1
1,1,2,2-Tetrachloroethane	1.7	1
Tetrachloroethylene (PCE)	0.8	1
Toluene	6800	1
1,1,1-Trichloroethane	3100	1
1,1,2-Trichloroethane	6	1
Trichloroethylene (TCE)	2.7	1
Vinyl chloride	2	1

Source: Taken from the SOW, Exhibit C



LEGEND

- SG-4 APPROXIMATE STAFF GAUGE LOCATION AND DESIGNATION
- SW-1 APPROXIMATE EXTRACTION WELL LOCATION AND DESIGNATION
- P36 APPROXIMATE PIEZOMETER LOCATION AND DESIGNATION
- M14 APPROXIMATE GROUNDWATER MONITORING WELL LOCATION AND DESIGNATION
- R1(U) APPROXIMATE SURFACE WATER SAMPLING STATION LOCATION AND DESIGNATION IN THE ROCKAWAY RIVER
- W1(U) APPROXIMATE SURFACE WATER SAMPLING STATION LOCATION AND DESIGNATION IN THE WHIPPANY RIVER
- LANDFILL SUB-AREA BOUNDARY
- LIMITS OF REMEDIAL ACTION CONSTRUCTION AS-BUILT SURVEY


NOTES

- 1.) TOPOGRAPHIC DATA PROVIDED WITHIN THE LIMITS OF REMEDIAL ACTION CONSTRUCTION AS-BUILT SURVEY REPRESENT THE AS-BUILT FINAL GRADES AS PROVIDED BY THE REMEDIAL ACTION CONTRACTOR (SEVENSON ENVIRONMENTAL).
- 2.) GROUND SURFACE ELEVATION CONTOURS SHOWN AT 5 FOOT INTERVALS FOR THE NORTH AND SOUTH FILLS AND AT A 1 FOOT INTERVAL FOR THE SMALL FILLS.
- 3.) GROUNDWATER CONTOUR INTERVAL IS ONE FOOT FOR THE SOUTH FILL AND TWO FEET FOR THE NORTH FILL.
- 4.) (U) - UPSTREAM SAMPLING STATION (WITH REGARD TO NEAREST FILL AREA)  
(D) - DOWNSTREAM SAMPLING STATION (WITH REGARD TO NEAREST FILL AREA)
- 5.) ALL UNITS ARE  $\mu\text{g/L}$ .
- 6.) TRIGGER IS EITHER THE WELL TRIGGER LEVEL FROM SOW EXHIBIT B OR RIVER TRIGGER LEVEL FROM SOW EXHIBIT C.

REFERENCES

- 1.) TOPOGRAPHIC DATA WITHIN THE FIVE FILLS WAS PROVIDED BY MOUNTAIN VIEW LAYOUT, DENVER, NEW JERSEY, WITH THE EXCEPTION OF TOPOGRAPHY FOR THE SOUTHWEST FILL, WHICH WAS PROVIDED BY GEOD CORP., NEWFOUNDLAND, NEW JERSEY. SEE NOTE 1, FOR ADDITIONAL INFORMATION REGARDING TOPOGRAPHIC DATA WITHIN THE FIVE FILLS. TOPOGRAPHIC DATA OUTSIDE OF THE FIVE FILLS WAS PROVIDED BY ATLANTIC AERIAL COMPANY, INC., BUDD LAKE, NEW JERSEY, DATED OCTOBER 4, 1994, BASED ON AERIAL PHOTOGRAPHY DATED APRIL 1, 1994.



FIGURE 1	PROJECT		TITLE		ANNUAL MONITORING EVENT YEAR NINE OF THE LONG TERM PHASE - SMALL FILLS SHARKEY LANDFILL SUPERFUND SITE MORRIS COUNTY, NEW JERSEY			
	PROJECT No.	943-6198	FILE No.	9436198RD05				
	REV. 0	SCALE AS SHOWN	DESIGN	PL	08/31/12			
	CADD	RG	08/31/12					
	CHECK	PL	08/31/12					
	REVIEW		MFC	08/31/12				
	REV		DATE	DES	REVISION DESCRIPTION			

**APPENDIX A**  
**DATA VALIDATION NARRATIVE, ANNUAL MONITORING EVENT**  
**YEAR NINE OF THE LONG-TERM PHASE – SMALL FILLS AND YEAR NINE OF THE PUMP**  
**AND TREAT PHASE FOR THE NORTH AND SOUTH FILLS**

**DATA VALIDATION NARRATIVE  
ANNUAL MONITORING EVENT  
YEAR NINE OF THE LONG-TERM PHASE FOR THE SMALL FILLS, YEAR NINE OF THE PUMP AND  
TREAT PHASE OF THE NORTH AND SOUTH FILLS**

This report presents the findings of the data validation performed on the analyses of shallow groundwater and surface water samples collected for the Annual Monitoring Event for Year Nine of the Long-Term Phase for the Small Fills and Year Nine of the Pump and Treat Phase of the North and South Fills. The monitoring event was conducted at the Sharkey Landfill Superfund Site (Site) in accordance with the Performance Monitoring Plan for Remedial Action (PMP, December 2005) for the Site. Samples for the event were collected April 11, 2012 through April 12, 2012 and on June 7, 2012. The chemical data for samples collected at the Site were validated to identify quality issues which could affect the use of the data for decision making purposes.

A total of twelve (12) groundwater and six (6) surface water samples, as well as three (3) field duplicates, four (4) trip blanks, and one (1) rinsate blank for Quality Control (QC) purposes, were collected for chemical analysis during the sampling events. The groundwater samples were analyzed for the TCL Chemicals<sup>1</sup> of Volatile Organic Compounds (VOCs), Semivolatile Organic Compounds (SVOCs), Pesticides/PCBs, and Metals, including the Well Chemicals (WC) List<sup>2</sup>, as listed in Tables 2 and 3, respectively, of the main report. The surface water samples were analyzed for the TCL Chemicals of VOCs, SVOCs, Pesticides/PCBs, and Metals, including the River Chemicals (RC) List<sup>3</sup>, as listed in Tables 2 and 4, respectively, of the main report. Field duplicates were analyzed for the same parameters as their parent sample and the trip blank samples were analyzed for VOCs only. CompuChem of Cary, North Carolina performed all chemical analyses following USEPA method guidelines:

- VOCs, SVOCs, and Pesticides/PCBs following USEPA Contract Laboratory Program (CLP) Statement of Work (SOW) for Multi-Media, Multi-Concentration Organics Analysis SOM01.2, October 2006;
- RC List VOCs following USEPA CLP SOW for Low Concentration Organic Analysis SOM01.2 Trace, October 2006;
- RC List VOCs (acrolein, acrylonitrile, and 2-chloroethyl vinyl ether only) following USEPA SW846 Method 8260B Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS) (December, 1996); and,
- Metals following USEPA CLP SOW for Multi-Media, Multi-Concentration Inorganics Analysis ILM05.4, December 2006.

<sup>1</sup> Exhibit A of the Site SOW identifies the TCL Chemicals.

<sup>2</sup> Exhibit B of the Site SOW identifies the Well Chemicals.

<sup>3</sup> Exhibit C of the Site SOW identifies the River Chemicals.

Information regarding the sample point identifications, analytical parameters, QC samples, sampling dates, and contract laboratory sample delivery group (SDG) designations are summarized in Table A-1.

The laboratory data were validated to for PARCCs and to verify data usability. Validation was performed on 100% of the data submitted by the Laboratory. Data validation was performed in accordance with the following documents:

- USEPA Region II Standard Operating Procedure (SOP) No. HW-33, Revision 1 – USEPA Contract Laboratory Program Statement of Work for Organic Analysis of Low/Medium Concentration of Volatile Organic Compounds SOM01.2 Data Validation, August 2007;
- USEPA Region II SOP No. HW-34, Revision 1 USEPA Contract Laboratory Program Statement of Work for Organic Analysis of Trace Concentration of Volatile Organic Compounds SOM01.2 Data Validation, August 2007;
- USEPA Region II SOP No. HW-24, Revision 1, Validating Volatile Organic Compounds by SW-846 Method 8260B, June 1999;
- USEPA Region II SOP No. HW-35, Revision 1, USEPA Contract Laboratory Program Statement of Work for Organic Analysis of Low/Medium Concentration Semivolatile Organic Compounds SOM01.2, August 2007;
- USEPA Region II SOP No. HW-36, Revision 1, USEPA Contract Laboratory Program Statement of Work for Organic Analysis of Low/Medium Concentration of Pesticide Organic Compounds SOM01.2, August 2007;
- USEPA Region II SOP No. HW-37, Revision 1, USEPA Contract Laboratory Program Statement of Work for Organic Analysis of Low/Medium Concentration of Aroclor Organic Compounds SOM01.2, August 2007; and,
- USEPA Region II SOP No. HW-2, Revision 13 – Validation of Metals for the Contract Laboratory Program, September 2006.

In general, chemical results for the samples collected at the Site were qualified on the basis of outlying precision or accuracy parameters, or on the basis of professional judgment. The following definitions provide brief explanations of the qualifiers which may have been assigned to data during the data validation process.

- |    |   |
|----|---|
| J  | The analyte was reported above the method detection limit; however, the associated numerical value is the approximate concentration of the analyte in the sample. |
| U  | The analyte was analyzed for, but was not detected above the method detection limit.  |
| UJ | The analyte was not detected above the method detection limit. The associated quality control measurements indicate the quantitation limit is approximate.        |



- R      The sample result was rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria.

In general, the data generated during the monitoring event met the QC criteria established in the respective USEPA methods and Region II Data Validation Standard Operating Procedures (SOPs). The following bulleted items highlight qualifications to specific parameters. Although these qualifications were applied to some of the samples collected at the Site, the qualifications may not have been required or applied to all samples collected. Table A-2 summarizes all qualifications applied to the data, with applicable qualifier codes.

- Surface water results for methylene chloride and acetone that were less than two times the Contract Required Quantitation Limit (CRQL) were qualified as non-detect (U) due to rinsate blank and/or trip blank contamination.
- Surface water results for toluene that were less than two times the CRQL were qualified as non-detect (U) due to rinsate blank contamination.
- Surface water results for acrolein and acrylonitrile were qualified as estimated (UJ) as the initial calibration relative response factor was less than 0.050.
- Surface water results for 2-methylnaphthalene and nitrobenzene were qualified as estimated (UJ) due to the continuing calibration verification percent difference being greater than QC limits.
- Surface water results for cyclohexane, methylcyclohexane, 1,2-dichloropropane, and bromodichloromethane were qualified as estimated (UJ) when surrogate recoveries were below QC limits.
- Surface water results for aluminum and beryllium that were less than contract required quantitation limit (CRQL) were qualified as non-detect (U) due to preparation blank and/or continuing calibration blank contamination.
- Surface water results for cyanide were qualified as estimated (UJ) as the matrix spike percent recovery was below QC limits.
- Surface water results for potassium were qualified as estimated (J) as the serial dilution %D was greater than 10% but less than 100%.
- Surface water results for bis(2-ethylhexyl)phthalate and zinc were qualified as estimated (J) due to the field duplicate relative percent difference (RPD) greater than QC limits.
- Groundwater results for methylene chloride and acetone that were less than two times the Contract Required Quantitation Limit (CRQL) were qualified as non-detect (U) due to storage and/or trip blank contamination.
- Groundwater results for toluene that were less than two times the CRQL were qualified as non-detect (U) due to method blank contamination.
- Groundwater results for bromomethane, caprolactam, nitrobenzene, 2-methylnaphthalene, 2,4-dinitrophenol, and pentachlorophenol were qualified as estimated (J/UJ) due to the continuing calibration verification (CCV) percent difference (%D) being greater than QC limits.
- Groundwater results for 4-nitrophenol were qualified as estimated (UJ) due to matrix spike recoveries below QC limits.

- Groundwater results for 1,4-dioxane were rejected (**R**) for non-detect results and qualified estimated (**J**) for detects as the initial calibration relative response factor was less than 0.010.
- Groundwater results for fluoranthene, pyrene, benzo(a)anthracene, chrysene, benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(a)pyrene, indeno(1,2,3-cd)pyrene, dibenzo(a,h)anthracene, benzo(g,h,i)perylene, pesticides and PCBs were qualified as estimated (**J/UJ**) due to surrogate recoveries outside of quality control (QC) limits.
- Groundwater results for 4,4'-DDE, beta-BHC, delta-BHC, gamma-BHC, and endrin were reported at the reporting limit and qualified as non-detect (**U**) as the percent difference between the two analytical columns was greater than 50% and the sample results were below the CRQL.
- Groundwater results for beta-BHC were rejected (**R**) as the percent difference between the two analytical columns was greater than 100%.
- Groundwater results for metals in the NorthFill and NorthFill FD sample were qualified as estimated (**J/UJ**) as samples were received at pH > 2.
- Groundwater results for aluminum, antimony, beryllium, and cadmium that were less than the CRQL were qualified as non-detect (**U**) due to preparation blank and/or continuing calibration blank contamination.
- Groundwater results for mercury were qualified as estimated (**UJ**) as the matrix spike percent recovery was below QC limits.
- Groundwater results for potassium were qualified as estimated (**J**) as the serial dilution %D was greater than 10% but less than 100%.

Based on the data validation, the analytical data for samples collected at the Site were determined to be acceptable (including estimated data) for their intended use, with the exception of data qualified as **R** (rejected). Generally, acceptable levels of accuracy and precision were achieved for the data, based on LCS, MS/MSD, field duplicate and surrogate recoveries. In addition, the data completeness (i.e., the ratio of the amount of valid data obtained to the amount expected, including estimated (**J/UJ**) data) was 99.6%, which meets the completeness goal specified in the PMP for the Site.

**TABLE A-1**  
**SAMPLE POINT IDENTIFICATIONS**  
**ANNUAL MONITORING EVENT FOR YEAR NINE OF THE**  
**LONG-TERM PHASE FOR THE SMALL FILLS**  
**AND YEAR NINE OF THE PUMP AND TREAT PHASE FOR THE NORTH AND SOUTH FILLS**  
**SHARKEY LANDFILL**

Lab SDG	Field ID	Matrix	Sample Date	WC VOCs <sup>1</sup>	RC VOCs <sup>2</sup>	SVOCs <sup>1</sup>	Pesticides /PCBs <sup>1</sup>	Metals <sup>3</sup>	MS/MSD	Duplicate
1204056 / 1204057	W1 U	Surface Water	4/12/2012		x	x	x	x		
1204056 / 1204057	W2 U	Surface Water	4/12/2012		x	x	x	x		
1204056 / 1204057	W2 U FD	Surface Water	4/12/2012		x	x	x	x		x
1204056 / 1204057	W3 D	Surface Water	4/12/2012		x	x	x	x		
1204056 / 1204057	W4 U	Surface Water	4/12/2012		x	x	x	x		
1204056 / 1204057	W5 U-D	Surface Water	4/12/2012		x	x	x	x		
1204056 / 1204057	W6 D	Surface Water	4/12/2012		x	x	x	x	x	
1204054	M-17	Ground Water	4/11/2012	x		x	x	x		
1204054	M-18	Ground Water	4/11/2012	x		x	x	x		
1204054	M-19A	Ground Water	4/12/2012	x		x	x	x		
1204054	M-20	Ground Water	4/12/2012	x		x	x	x	x	
1204054	M-21	Ground Water	4/12/2012	x		x	x	x		
1204054	M-22	Ground Water	4/12/2012	x		x	x	x		
1204054	M-23	Ground Water	4/12/2012	x		x	x	x		
1204054	M-23-FD	Ground Water	4/12/2012	x		x	x	x		x
1204054	M-24	Ground Water	4/12/2012	x		x	x	x		
1204054	M-25	Ground Water	4/12/2012	x		x	x	x		
1204054	M-26	Ground Water	4/12/2012	x		x	x	x		
1204055	North	Ground Water	4/11/2012	x		x	x	x	x	
1204055	North FD	Ground Water	4/11/2012	x		x	x	x		x
1206025	South	Ground Water	6/7/2012	x		x	x	x		
<b>Field Blanks</b>										
1204054	TBGW-041112	TB	4/11/2012	x						
1204056 / 1204057	TBSW-041212	TB	4/12/2012		x					
1204056 / 1204057	RBSW-041212	RB	4/12/2012		x	x	x	x		
1204055	TBLE_041112	TB	4/11/2012	x						
1206025	TBGW-060712	TB	6/7/2012	x						

**Notes:**

All samples to be analyzed for chemical analysis were shipped to CompuChem of Cary, North Carolina.

<sup>1</sup>VOCs, SVOCs, and Pesticides/PCBs following USEPA Contract Laboratory Program (CLP) Statement of Work (SOW) for Multi-Media, Multi-Concentration Organics Analysis SOM01.2, October 2006.

<sup>2</sup>RC list VOCs following USEPA CLP SOW for Low Concentration Organic Analysis SOM01.2 (trace) and USEPA SW846 Method 8260B Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS) (December 1996) for acrolein, acrylonitrile, and 2-chloroethyl vinyl ether only.

<sup>3</sup>Metals including cyanide by USEPA CLP SOW for Multi-Media, Multi-Concentration Inorganics Analysis ILM05.4, December 2006.

**Abbreviations:**

SDG = Sample Delivery Group

MS/MSD = Matrix Spike/ Matrix Spike Duplicate

VOCs = Volatile Organic Compounds

SVOCs = Semivolatile Organic Compounds

TB = Trip Blank

WC = Well Chemicals

RC = River Chemicals

RB = Rinsate blank

**TABLE A-2**  
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SDG	Field ID	Matrix	Analysis	Analyte	New Result	New RL	Qual	Golder Qual Code	Comments
1204054	M-19A	GW	Metals	Aluminum	200	-	U	PB	Preparation blank contamination.
1204054	M-20	GW	Metals	Aluminum	200	-	U	PB	Preparation blank contamination.
1204054	M-21	GW	Metals	Aluminum	200	-	U	PB	Preparation blank contamination.
1204054	M-22	GW	Metals	Aluminum	200	-	U	PB	Preparation blank contamination.
1204054	M-23-FD	GW	Metals	Aluminum	200	-	U	PB	Preparation blank contamination.
1204054	M-24	GW	Metals	Aluminum	200	-	U	PB	Preparation blank contamination.
1204054	M-26	GW	Metals	Aluminum	200	-	U	PB	Preparation blank contamination.
1204054	M-17	GW	Metals	Beryllium	5	-	U	PB	Preparation blank contamination.
1204054	M-18	GW	Metals	Beryllium	5	-	U	PB	Preparation blank contamination.
1204054	M-19A	GW	Metals	Beryllium	5	-	U	PB	Preparation blank contamination.
1204054	M-20	GW	Metals	Beryllium	5	-	U	PB	Preparation blank contamination.
1204054	M-21	GW	Metals	Beryllium	5	-	U	CBC	Continuing calibration blank contamination.
1204054	M-22	GW	Metals	Beryllium	5	-	U	CBC	Continuing calibration blank contamination.
1204054	M-23	GW	Metals	Beryllium	5	-	U	CBC	Continuing calibration blank contamination.
1204054	M-23-FD	GW	Metals	Beryllium	5	-	U	CBC	Continuing calibration blank contamination.
1204054	M-24	GW	Metals	Beryllium	5	-	U	CBC	Continuing calibration blank contamination.
1204054	M-25	GW	Metals	Beryllium	5	-	U	CBC	Continuing calibration blank contamination.
1204054	M-26	GW	Metals	Beryllium	5	-	U	CBC	Continuing calibration blank contamination.
1204054	M-17	GW	Metals	Antimony	60	-	U	CBC	Continuing calibration blank contamination.
1204054	M-18	GW	Metals	Antimony	60	-	U	CBC	Continuing calibration blank contamination.
1204054	M-19A	GW	Metals	Antimony	60	-	U	CBC	Continuing calibration blank contamination.
1204054	M-20	GW	Metals	Antimony	60	-	U	CBC	Continuing calibration blank contamination.
1204054	M-21	GW	Metals	Antimony	60	-	U	CBC	Continuing calibration blank contamination.
1204054	M-22	GW	Metals	Antimony	60	-	U	CBC	Continuing calibration blank contamination.
1204054	M-23	GW	Metals	Antimony	60	-	U	CBC	Continuing calibration blank contamination.
1204054	M-23-FD	GW	Metals	Antimony	60	-	U	CBC	Continuing calibration blank contamination.
1204054	M-25	GW	Metals	Antimony	60	-	U	CBC	Continuing calibration blank contamination.
1204054	M-26	GW	Metals	Antimony	60	-	U	CBC	Continuing calibration blank contamination.
1204054	M-21	GW	Metals	Cadmium	5	-	U	CBC	Continuing calibration blank contamination.
1204054	M-22	GW	Metals	Cadmium	5	-	U	CBC	Continuing calibration blank contamination.
1204054	M-23	GW	Metals	Cadmium	5	-	U	CBC	Continuing calibration blank contamination.
1204054	M-23-FD	GW	Metals	Cadmium	5	-	U	CBC	Continuing calibration blank contamination.
1204054	M-24	GW	Metals	Cadmium	5	-	U	CBC	Continuing calibration blank contamination.
1204054	M-25	GW	Metals	Cadmium	5	-	U	CBC	Continuing calibration blank contamination.
1204054	M-26	GW	Metals	Cadmium	5	-	U	CBC	Continuing calibration blank contamination.
1204054	M-17	GW	Metals	Potassium	-	-	J	SD	Serial dilution %D > 10%.

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SDG	Field ID	Matrix	Analysis	Analyte	New Result	New RL	Qual	Golder Qual Code	Comments
1204054	M-18	GW	Metals	Potassium	-	-	J	SD	Serial dilution %D > 10%.
1204054	M-19A	GW	Metals	Potassium	-	-	J	SD	Serial dilution %D > 10%.
1204054	M-20	GW	Metals	Potassium	-	-	J	SD	Serial dilution %D > 10%.
1204054	M-21	GW	Metals	Potassium	-	-	J	SD	Serial dilution %D > 10%.
1204054	M-22	GW	Metals	Potassium	-	-	J	SD	Serial dilution %D > 10%.
1204054	M-23	GW	Metals	Potassium	-	-	J	SD	Serial dilution %D > 10%.
1204054	M-23-FD	GW	Metals	Potassium	-	-	J	SD	Serial dilution %D > 10%.
1204054	M-24	GW	Metals	Potassium	-	-	J	SD	Serial dilution %D > 10%.
1204054	M-25	GW	Metals	Potassium	-	-	J	SD	Serial dilution %D > 10%.
1204054	M-26	GW	Metals	Potassium	-	-	J	SD	Serial dilution %D > 10%.
1204054	M-17	GW	VOCs	1,4-Dioxane	-	-	R	IRF	ICAL RRF < 0.010.
1204054	M-18	GW	VOCs	1,4-Dioxane	-	-	R	IRF	ICAL RRF < 0.010.
1204054	M-19A	GW	VOCs	1,4-Dioxane	-	-	R	IRF	ICAL RRF < 0.010.
1204054	M-20	GW	VOCs	1,4-Dioxane	-	-	R	IRF	ICAL RRF < 0.010.
1204054	M-21	GW	VOCs	1,4-Dioxane	-	-	R	IRF	ICAL RRF < 0.010.
1204054	M-22	GW	VOCs	1,4-Dioxane	-	-	R	IRF	ICAL RRF < 0.010.
1204054	M-23	GW	VOCs	1,4-Dioxane	-	-	R	IRF	ICAL RRF < 0.010.
1204054	M-23-FD	GW	VOCs	1,4-Dioxane	-	-	R	IRF	ICAL RRF < 0.010.
1204054	M-24	GW	VOCs	1,4-Dioxane	-	-	R	IRF	ICAL RRF < 0.010.
1204054	M-25	GW	VOCs	1,4-Dioxane	-	-	R	IRF	ICAL RRF < 0.010.
1204054	M-26	GW	VOCs	1,4-Dioxane	-	-	R	IRF	ICAL RRF < 0.010.
1204054	M-18	GW	SVOCs	Nitrobenzene	-	-	UJ	CRD	CCV %D outside QC criteria.
1204054	M-18	GW	SVOCs	2-Methylnaphthalene	-	-	UJ	CRD	CCV %D outside QC criteria.
1204054	M-18	GW	SVOCs	Caprolactam	-	-	UJ	CRD	CCV %D outside QC criteria.
1204054	M-20	GW	SVOCs	Nitrobenzene	-	-	UJ	CRD	CCV %D outside QC criteria.
1204054	M-20	GW	SVOCs	2-Methylnaphthalene	-	-	UJ	CRD	CCV %D outside QC criteria.
1204054	M-20	GW	SVOCs	Caprolactam	-	-	UJ	CRD	CCV %D outside QC criteria.
1204054	M-21	GW	SVOCs	Nitrobenzene	-	-	UJ	CRD	CCV %D outside QC criteria.
1204054	M-21	GW	SVOCs	2-Methylnaphthalene	-	-	UJ	CRD	CCV %D outside QC criteria.
1204054	M-21	GW	SVOCs	Caprolactam	-	-	UJ	CRD	CCV %D outside QC criteria.
1204054	M-22	GW	SVOCs	Nitrobenzene	-	-	UJ	CRD	CCV %D outside QC criteria.
1204054	M-22	GW	SVOCs	2-Methylnaphthalene	-	-	UJ	CRD	CCV %D outside QC criteria.
1204054	M-22	GW	SVOCs	Caprolactam	-	-	UJ	CRD	CCV %D outside QC criteria.
1204054	M-23	GW	SVOCs	Nitrobenzene	-	-	UJ	CRD	CCV %D outside QC criteria.
1204054	M-23	GW	SVOCs	2-Methylnaphthalene	-	-	UJ	CRD	CCV %D outside QC criteria.
1204054	M-23	GW	SVOCs	Caprolactam	-	-	UJ	CRD	CCV %D outside QC criteria.
1204054	M-25	GW	SVOCs	Nitrobenzene	-	-	UJ	CRD	CCV %D outside QC criteria.
1204054	M-25	GW	SVOCs	2-Methylnaphthalene	-	-	UJ	CRD	CCV %D outside QC criteria.

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SDG	Field ID	Matrix	Analysis	Analyte	New Result	New RL	Qual	Golder Qual Code	Comments
1204054	M-25	GW	SVOCs	Caprolactam	-	-	UJ	CRD	CCV %D outside QC criteria.
1204054	M-26	GW	SVOCs	Nitrobenzene	-	-	UJ	CRD	CCV %D outside QC criteria.
1204054	M-26	GW	SVOCs	2-Methylnaphthalene	-	-	UJ	CRD	CCV %D outside QC criteria.
1204054	M-26	GW	SVOCs	Caprolactam	-	-	UJ	CRD	CCV %D outside QC criteria.
1204054	M-23-FD	GW	SVOCs	Pentachlorophenol	-	-	UJ	CRD	CCV %D outside QC criteria.
1204054	M-24	GW	SVOCs	Pentachlorophenol	-	-	UJ	CRD	CCV %D outside QC criteria.
1204054	M-17	GW	VOCs	Acetone	-	12	U	SB	Storage blank contamination.
1204054	M-18	GW	VOCs	Acetone	10	-	U	SB	Storage blank contamination.
1204054	M-19A	GW	VOCs	Acetone	-	19	U	SB	Storage blank contamination.
1204054	M-20	GW	VOCs	Acetone	-	18	U	SB	Storage blank contamination.
1204054	M-21	GW	VOCs	Acetone	-	13	U	SB	Storage blank contamination.
1204054	M-22	GW	VOCs	Acetone	-	14	U	SB	Storage blank contamination.
1204054	M-23	GW	VOCs	Acetone	-	13	U	SB	Storage blank contamination.
1204054	M-23-FD	GW	VOCs	Acetone	-	12	U	SB	Storage blank contamination.
1204054	M-24	GW	VOCs	Acetone	-	12	U	SB	Storage blank contamination.
1204054	M-25	GW	VOCs	Acetone	-	16	U	SB	Storage blank contamination.
1204054	M-26	GW	VOCs	Acetone	-	14	U	SB	Storage blank contamination.
1204054	M-17	GW	Pest	All pesticides	-	-	J/UJ	SL	Surrogate recovery below QC Limits.
1204054	M-25	GW	Pest	All pesticides	-	-	UJ	SL	Surrogate recovery below QC Limits.
1204054	M-25	GW	PCBs	All PCBs	-	-	UJ	SL	Surrogate recovery below QC Limits.
1204055	North	GW	Metals	Aluminum	-	-	J	SC	Sample not preserved to correct pH.
1204055	North	GW	Metals	Antimony	60	-	UJ	SC/CBC	Sample not preserved to correct pH / calibration blank contamination.
1204055	North	GW	Metals	Arsenic	-	-	J	SC	Sample not preserved to correct pH.
1204055	North	GW	Metals	Barium	-	-	J	SC	Sample not preserved to correct pH.
1204055	North	GW	Metals	Beryllium	-	-	J	SC	Sample not preserved to correct pH.
1204055	North	GW	Metals	Cadmium	5	-	UJ	SC/CBC	Sample not preserved to correct pH / calibration blank contamination.
1204055	North	GW	Metals	Calcium	-	-	J	SC	Sample not preserved to correct pH.
1204055	North	GW	Metals	Chromium	-	-	J	SC	Sample not preserved to correct pH.
1204055	North	GW	Metals	Cobalt	-	-	J	SC	Sample not preserved to correct pH.
1204055	North	GW	Metals	Copper	-	-	J	SC	Sample not preserved to correct pH.
1204055	North	GW	Metals	Iron	-	-	J	SC/FD	Sample not preserved to correct pH / field duplicate RDP above QC limits.
1204055	North	GW	Metals	Lead	-	-	J	SC	Sample not preserved to correct pH.
1204055	North	GW	Metals	Magnesium	-	-	J	SC	Sample not preserved to correct pH.
1204055	North	GW	Metals	Manganese	-	-	J	SC	Sample not preserved to correct pH.
1204055	North	GW	Metals	Nickel	-	-	J	SC	Sample not preserved to correct pH.
1204055	North	GW	Metals	Potassium	-	-	J	SC	Sample not preserved to correct pH.

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SDG	Field ID	Matrix	Analysis	Analyte	New Result	New RL	Qual	Goldier Qual Code	Comments
1204055	North	GW	Metals	Selenium	-	-	J	SC	Sample not preserved to correct pH.
1204055	North	GW	Metals	Silver	-	-	UJ	SC	Sample not preserved to correct pH.
1204055	North	GW	Metals	Sodium	-	-	J	SC	Sample not preserved to correct pH.
1204055	North	GW	Metals	Thallium	-	-	UJ	SC	Sample not preserved to correct pH.
1204055	North	GW	Metals	Vanadium	-	-	J	SC	Sample not preserved to correct pH.
1204055	North	GW	Metals	Zinc	-	-	J	SC	Sample not preserved to correct pH.
1204055	North	GW	Metals	Cyanide	-	-	J	SC	Sample not preserved to correct pH.
1204055	North	GW	Metals	Mercury	-	-	UJ	SC/ML	Sample not preserved to correct pH / MS %R below QC limits.
1204055	North FD	GW	Metals	Aluminum	-	-	J	SC	Sample not preserved to correct pH.
1204055	North FD	GW	Metals	Antimony	60	-	UJ	SC/CBC	Sample not preserved to correct pH / calibration blank contamination.
1204055	North FD	GW	Metals	Arsenic	-	-	J	SC	Sample not preserved to correct pH.
1204055	North FD	GW	Metals	Barium	-	-	J	SC	Sample not preserved to correct pH.
1204055	North FD	GW	Metals	Beryllium	-	-	J	SC	Sample not preserved to correct pH.
1204055	North FD	GW	Metals	Cadmium	5	-	UJ	SC/CBC	Sample not preserved to correct pH / calibration blank contamination.
1204055	North FD	GW	Metals	Calcium	-	-	J	SC	Sample not preserved to correct pH.
1204055	North FD	GW	Metals	Chromium	-	-	J	SC	Sample not preserved to correct pH.
1204055	North FD	GW	Metals	Cobalt	-	-	J	SC	Sample not preserved to correct pH.
1204055	North FD	GW	Metals	Copper	-	-	J	SC	Sample not preserved to correct pH.
1204055	North FD	GW	Metals	Iron	-	-	J	SC/FD	Sample not preserved to correct pH / field duplicate RDP above QC limits.
1204055	North FD	GW	Metals	Lead	-	-	J	SC	Sample not preserved to correct pH.
1204055	North FD	GW	Metals	Magnesium	-	-	J	SC	Sample not preserved to correct pH.
1204055	North FD	GW	Metals	Manganese	-	-	J	SC	Sample not preserved to correct pH.
1204055	North FD	GW	Metals	Nickel	-	-	J	SC	Sample not preserved to correct pH.
1204055	North FD	GW	Metals	Potassium	-	-	J	SC	Sample not preserved to correct pH.
1204055	North FD	GW	Metals	Selenium	-	-	J	SC	Sample not preserved to correct pH.
1204055	North FD	GW	Metals	Silver	-	-	UJ	SC	Sample not preserved to correct pH.
1204055	North FD	GW	Metals	Sodium	-	-	J	SC	Sample not preserved to correct pH.
1204055	North FD	GW	Metals	Thallium	-	-	UJ	SC	Sample not preserved to correct pH.
1204055	North FD	GW	Metals	Vanadium	-	-	J	SC	Sample not preserved to correct pH.
1204055	North FD	GW	Metals	Zinc	-	-	J	SC	Sample not preserved to correct pH.
1204055	North FD	GW	Metals	Cyanide	-	-	J	SC	Sample not preserved to correct pH.
1204055	North FD	GW	Metals	Mercury	-	-	UJ	SC/ML	Sample not preserved to correct pH / MS %R below QC limits.
1204055	North	GW	VOCs	1,4-Dioxane	-	-	J	IRF	ICAL RRF < 0.01.

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SDG	Field ID	Matrix	Analysis	Analyte	New Result	New RL	Qual	Golder Qual Code	Comments
1204055	North FD	GW	VOCs	1,4-Dioxane	-	-	R	IRF	ICAL RRF < 0.01.
1204055	North	GW	SVOCs	Nitrobenzene	-	-	UJ	CRD	CCV %D outside QC criteria.
1204055	North	GW	SVOCs	2-Methylnaphthalene	-	-	J	CRD	CCV %D outside QC criteria.
1204055	North	GW	SVOCs	Pentachlorophenol	-	-	UJ	CRD	CCV %D outside QC criteria.
1204055	North	GW	SVOCs	2,4-Dinitrophenol	-	-	UJ	CRD	CCV %D outside QC criteria.
1204055	North FD	GW	SVOCs	Nitrobenzene	-	-	UJ	CRD	CCV %D outside QC criteria.
1204055	North FD	GW	SVOCs	2-Methylnaphthalene	-	-	J	CRD	CCV %D outside QC criteria.
1204055	North FD	GW	SVOCs	Pentachlorophenol	-	-	UJ	CRD	CCV %D outside QC criteria.
1204055	North FD	GW	SVOCs	2,4-Dinitrophenol	-	-	UJ	CRD	CCV %D outside QC criteria.
1204055	North	GW	VOCs	Acetone	100	-	U	TB	Trip blank contamination.
1204055	North FD	GW	SVOCs	Fluoranthene	-	-	UJ	SL	Surrogate recovery below QC limits.
1204055	North FD	GW	SVOCs	Pyrene	-	-	UJ	SL	Surrogate recovery below QC limits.
1204055	North FD	GW	SVOCs	Benzo(a)anthracene	-	-	UJ	SL	Surrogate recovery below QC limits.
1204055	North FD	GW	SVOCs	Chrysene	-	-	UJ	SL	Surrogate recovery below QC limits.
1204055	North FD	GW	SVOCs	Benzo (b)fluoranthene	-	-	UJ	SL	Surrogate recovery below QC limits.
1204055	North FD	GW	SVOCs	Benzo(k)fluoranthene	-	-	UJ	SL	Surrogate recovery below QC limits.
1204055	North FD	GW	SVOCs	Benzo(a)pyrene	-	-	UJ	SL	Surrogate recovery below QC limits.
1204055	North FD	GW	SVOCs	Indeno(1,2,3-cd)pyrene	-	-	UJ	SL	Surrogate recovery below QC limits.
1204055	North FD	GW	SVOCs	Dibenzo(a,h)anthracene	-	-	UJ	SL	Surrogate recovery below QC limits.
1204055	North FD	GW	SVOCs	Benzo(g,h,i)perylene	-	-	UJ	SL	Surrogate recovery below QC limits.
1204055	North	GW	Pest	beta-BHC	-	-	R	PD	%D between columns > 50%.
1204055	North	GW	Pest	delta-BHC	0.49	-	U	PD	%D between columns > 50%.
1204055	North	GW	Pest	gamma-BHC (Lindane)	0.049	-	U	PD	%D between columns > 50%.
1204055	North	GW	Pest	Endrin	0.098	-	U	PD	%D between columns > 50%.
1204055	North FD	GW	Pest	beta-BHC	-	-	R	PD	%D between columns > 50%.
1204055	North FD	GW	Pest	delta-BHC	0.5	-	U	PD	%D between columns > 50%.
1204055	North FD	GW	Pest	4,4'-DDE	0.1	-	U	PD	%D between columns > 50%.
1204055	North	GW	SVOCs	4-Nitrophenol	-	-	UJ	ML	MS/MSD %R = 0.
1204055	North FD	GW	SVOCs	4-Nitrophenol	-	-	UJ	ML	MS/MSD %R = 0.
1204056	W1-U	SW	Metals	Aluminum	-	-	J	CBC	Continuing calibration blank contamination.
1204056	W2-U	SW	Metals	Aluminum	-	-	J	CBC	Continuing calibration blank contamination.
1204056	W2-U-FD	SW	Metals	Aluminum	200	-	U	CBC	Continuing calibration blank contamination.
1204056	W3-D	SW	Metals	Aluminum	200	-	U	CBC	Continuing calibration blank contamination.
1204056	W4-U	SW	Metals	Aluminum	-	-	J	CBC	Continuing calibration blank contamination.
1204056	W5-UD	SW	Metals	Aluminum	-	-	J	CBC	Continuing calibration blank contamination.
1204056	W6-D	SW	Metals	Aluminum	200	-	U	CBC	Continuing calibration blank contamination.
1204056	W1-U	SW	Metals	Beryllium	5	-	U	PB	Preparation blank contamination
1204056	W2-U-FD	SW	Metals	Beryllium	5	-	U	PB	Preparation blank contamination
1204056	W2-U	SW	Metals	Beryllium	5	-	U	PB	Preparation blank contamination



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SDG	Field ID	Matrix	Analysis	Analyte	New Result	New RL	Qual	Golder Qual Code	Comments
1204056	W3-D	SW	Metals	Beryllium	5	-	U	PB	Preparation blank contamination
1204056	W4-U	SW	Metals	Beryllium	5	-	U	PB	Preparation blank contamination
1204056	W5-UD	SW	Metals	Beryllium	5	-	U	PB	Preparation blank contamination
1204056	W6-D	SW	Metals	Beryllium	5	-	U	PB	Preparation blank contamination
1204056	W1-U	SW	Metals	Cyanide	-	-	UJ	ML	Matrix spike recoveries below QC Limits.
1204056	W2-U-FD	SW	Metals	Cyanide	-	-	UJ	ML	Matrix spike recoveries below QC Limits.
1204056	W2-U	SW	Metals	Cyanide	-	-	UJ	ML	Matrix spike recoveries below QC Limits.
1204056	W3-D	SW	Metals	Cyanide	-	-	UJ	ML	Matrix spike recoveries below QC Limits.
1204056	W4-U	SW	Metals	Cyanide	-	-	UJ	ML	Matrix spike recoveries below QC Limits.
1204056	W5-UD	SW	Metals	Cyanide	-	-	UJ	ML	Matrix spike recoveries below QC Limits.
1204056	W6-D	SW	Metals	Cyanide	-	-	UJ	ML	Matrix spike recoveries below QC Limits.
1204056	W2-U-FD	SW	Metals	Zinc	-	-	J	FD	Field duplicate RPD above QC limits.
1204056	W2-U	SW	Metals	Zinc	-	-	J	FD	Field duplicate RPD above QC limits.
1204056	W1-U	SW	Metals	Potassium	-	-	J	SD	Serial dilution %D > 10%.
1204056	W2-U-FD	SW	Metals	Potassium	-	-	J	SD	Serial dilution %D > 10%.
1204056	W2-U	SW	Metals	Potassium	-	-	J	SD	Serial dilution %D > 10%.
1204056	W3-D	SW	Metals	Potassium	-	-	J	SD	Serial dilution %D > 10%.
1204056	W4-U	SW	Metals	Potassium	-	-	J	SD	Serial dilution %D > 10%.
1204056	W5-UD	SW	Metals	Potassium	-	-	J	SD	Serial dilution %D > 10%.
1204056	W6-D	SW	Metals	Potassium	-	-	J	SD	Serial dilution %D > 10%.
1204056	W1-U	SW	VOCs	Methylene Chloride	0.5	-	U	RB	Rinsate blank contamination.
1204056	W1-U	SW	VOCs	Cyclohexane	-	-	UJ	SL	Surrogate recovery below QC Limits.
1204056	W1-U	SW	VOCs	Methylcyclohexane	-	-	UJ	SL	Surrogate recovery below QC Limits.
1204056	W1-U	SW	VOCs	1,2-Dichloropropane	-	-	UJ	SL	Surrogate recovery below QC Limits.
1204056	W1-U	SW	VOCs	Bromodichloromethane	-	-	UJ	SL	Surrogate recovery below QC Limits.
1204056	W1-U	SW	VOCs	Toluene	0.5	-	U	RB	Rinsate blank contamination.
1204056	W2-U	SW	VOCs	Acetone	-	14	U	TB	Trip blank contamination.
1204056	W2-U	SW	VOCs	Methylene Chloride	-	0.65	U	RB	Rinsate blank contamination.
1204056	W2-U	SW	VOCs	Toluene	0.5	-	U	RB	Rinsate blank contamination.
1204056	W2-U-FD	SW	VOCs	Acetone	-	9.9	U	TB	Trip blank contamination.
1204056	W2-U-FD	SW	VOCs	Methylene Chloride	0.5	-	U	RB	Rinsate blank contamination.
1204056	W2-U-FD	SW	VOCs	Cyclohexane	-	-	UJ	SL	Surrogate recovery below QC Limits.
1204056	W2-U-FD	SW	VOCs	Methylcyclohexane	-	-	UJ	SL	Surrogate recovery below QC Limits.
1204056	W2-U-FD	SW	VOCs	1,2-Dichloropropane	-	-	UJ	SL	Surrogate recovery below QC Limits.
1204056	W2-U-FD	SW	VOCs	Bromodichloromethane	-	-	UJ	SL	Surrogate recovery below QC Limits.
1204056	W2-U-FD	SW	VOCs	Toluene	0.5	-	U	RB	Rinsate blank contamination.
1204056	W3-D	SW	VOCs	Methylene Chloride	-	0.72	U	RB	Rinsate blank contamination.
1204056	W3-D	SW	VOCs	Cyclohexane	-	-	UJ	SL	Surrogate recovery below QC Limits.
1204056	W3-D	SW	VOCs	Methylcyclohexane	-	-	UJ	SL	Surrogate recovery below QC Limits.

**TABLE A-2**  
**SUMMARY OF DATA QUALIFICATIONS**  
**ANNUAL MONITORING EVENT FOR YEAR NINE OF THE**  
**LONG-TERM PHASE FOR THE SMALL FILLS**  
**AND YEAR NINE OF THE PUMP AND TREAT PHASE FOR THE NORTH AND SOUTH FILLS**  
**SHARKEY LANDFILL**

SDG	Field ID	Matrix	Analysis	Analyte	New Result	New RL	Qual	Golder Qual Code	Comments
1204056	W3-D	SW	VOCs	1,2-Dichloropropane	-	-	UJ	SL	Surrogate recovery below QC Limits.
1204056	W3-D	SW	VOCs	Bromodichloromethane	-	-	UJ	SL	Surrogate recovery below QC Limits.
1204056	W3-D	SW	VOCs	Toluene	0.5	-	U	RB	Rinsate blank contamination.
1204056	W4-U	SW	VOCs	Methylene Chloride	0.5	-	U	RB	Rinsate blank contamination.
1204056	W4-U	SW	VOCs	Toluene	0.5	-	U	RB	Rinsate blank contamination.
1204056	W5-UD	SW	VOCs	Acetone	-	13	U	TB	Trip blank contamination.
1204056	W5-UD	SW	VOCs	Methylene Chloride	-	0.73	U	RB	Rinsate blank contamination.
1204056	W5-UD	SW	VOCs	Toluene	0.5	-	U	RB	Rinsate blank contamination.
1204056	W6-D	SW	VOCs	Methylene Chloride	-	0.57	U	RB	Rinsate blank contamination.
1204056	W6-D	SW	VOCs	Toluene	0.5	-	U	RB	Rinsate blank contamination.
1204056	W2-U	SW	SVOCs	Bis(2-ethylhexyl)phthalate	-	-	J	FD	Field duplicate RPD above QC limits.
1204056	W2-U-FD	SW	SVOCs	Bis(2-ethylhexyl)phthalate	-	-	J	FD	Field duplicate RPD above QC limits.
1204056	W1-U	SW	SVOCs	2-methylnaphthalene	-	-	UJ	CRD	CCV %D outside QC criteria.
1204056	W1-U	SW	SVOCs	nitrobenzene	-	-	UJ	CRD	CCV %D outside QC criteria.
1204056	W2-U	SW	SVOCs	2-methylnaphthalene	-	-	UJ	CRD	CCV %D outside QC criteria.
1204056	W2-U	SW	SVOCs	nitrobenzene	-	-	UJ	CRD	CCV %D outside QC criteria.
1204056	W3-D	SW	SVOCs	2-methylnaphthalene	-	-	UJ	CRD	CCV %D outside QC criteria.
1204056	W3-D	SW	SVOCs	nitrobenzene	-	-	UJ	CRD	CCV %D outside QC criteria.
1204056	W4-U	SW	SVOCs	2-methylnaphthalene	-	-	UJ	CRD	CCV %D outside QC criteria.
1204056	W4-U	SW	SVOCs	nitrobenzene	-	-	UJ	CRD	CCV %D outside QC criteria.
1204056	W5-UD	SW	SVOCs	2-methylnaphthalene	-	-	UJ	CRD	CCV %D outside QC criteria.
1204056	W5-UD	SW	SVOCs	nitrobenzene	-	-	UJ	CRD	CCV %D outside QC criteria.
1204056	W6-D	SW	SVOCs	2-methylnaphthalene	-	-	UJ	CRD	CCV %D outside QC criteria.
1204056	W6-D	SW	SVOCs	nitrobenzene	-	-	UJ	CRD	CCV %D outside QC criteria.
1204056	W2-U-FD	SW	SVOCs	2-methylnaphthalene	-	-	UJ	CRD	CCV %D outside QC criteria.
1204056	W2-U-FD	SW	SVOCs	nitrobenzene	-	-	UJ	CRD	CCV %D outside QC criteria.
1204057	W2-U	SW	VOCs	Acrolein	-	-	UJ	IRF	Initial calibration RRF < 0.050.
1204057	W6-D	SW	VOCs	Acrolein	-	-	UJ	IRF	Initial calibration RRF < 0.050.
1204057	W5-UD	SW	VOCs	Acrolein	-	-	UJ	IRF	Initial calibration RRF < 0.050.
1204057	W4-U	SW	VOCs	Acrolein	-	-	UJ	IRF	Initial calibration RRF < 0.050.
1204057	W2-U-FD	SW	VOCs	Acrolein	-	-	UJ	IRF	Initial calibration RRF < 0.050.
1204057	W3-D	SW	VOCs	Acrolein	-	-	UJ	IRF	Initial calibration RRF < 0.050.
1204057	W1-U	SW	VOCs	Acrolein	-	-	UJ	IRF	Initial calibration RRF < 0.050.
1204057	W2-U	SW	VOCs	Acrylonitrile	-	-	UJ	IRF	Initial calibration RRF < 0.050.
1204057	W6-D	SW	VOCs	Acrylonitrile	-	-	UJ	IRF	Initial calibration RRF < 0.050.
1204057	W5-UD	SW	VOCs	Acrylonitrile	-	-	UJ	IRF	Initial calibration RRF < 0.050.
1204057	W4-U	SW	VOCs	Acrylonitrile	-	-	UJ	IRF	Initial calibration RRF < 0.050.
1204057	W2-U-FD	SW	VOCs	Acrylonitrile	-	-	UJ	IRF	Initial calibration RRF < 0.050.
1204057	W3-D	SW	VOCs	Acrylonitrile	-	-	UJ	IRF	Initial calibration RRF < 0.050.

**TABLE A-2**  
**SUMMARY OF DATA QUALIFICATIONS**  
**ANNUAL MONITORING EVENT FOR YEAR NINE OF THE**  
**LONG-TERM PHASE FOR THE SMALL FILLS**  
**AND YEAR NINE OF THE PUMP AND TREAT PHASE FOR THE NORTH AND SOUTH FILLS**  
**SHARKEY LANDFILL**

SDG	Field ID	Matrix	Analysis	Analyte	New Result	New RL	Qual	Golder Qual Code	Comments
1204057	W1-U	SW	VOCs	Acrylonitrile	-	-	UJ	IRF	Initial calibration RRF < 0.050.
1206025	South	GW	VOCs	1,4-Dioxane	-	-	J	IRF	ICAL RRF < 0.01.
1206025	South	GW	VOCs	Bromomethane	-	-	UJ	CRD	CCV %D outside QC criteria.
1206025	South	GW	VOCs	Acetone	50	-	U	TB	Trip blank contamination.
1206025	South	GW	VOCs	Methylene Chloride	25	-	U	TB	Trip blank contamination.
1206025	South	GW	VOCs	Toluene	25	-	U	MB	Method blank contamination.
1206025	South	GW	Pest	beta-BHC	0.5	-	U	PD	Pesticide column %D > 50%.

**Notes:**

%D = Percent Difference.

CCAL = Continuing calibration.

CRQL = Contract Required Quantitation Limit.

GW= Groundwater

ICAL = Initial calibration.

J = Result is estimated.

MS/MSD = Matrix Spike and Matrix Spike Duplicate

Pest = Pesticides

QC = Quality Control.

Qual = Qualifier

R = Sample result is rejected.

RL = Reporting limit

RRF = Relative response factor.

SDG = sample delivery group

SVOC = Semivolatile Organic Compound

SW = Surface water

U = Non-detect.

UJ = Non-detected result is estimated.

VOC = Volatile Organic Compound

**Golder Codes:****CBC** Continuing calibration blank contamination.**CRD** Calibration verification %D.**FD** Field duplicate relative percent difference.**IRF** Initial Calibration RRF < QC Limits.**MB** Method blank contamination.**ML** Matrix spike recovery below quality control limits.**PB** Preparation blank contamination.**PD** Percent difference between columns > 25%**RB** Rinsate blank contamination.**SB** Storage blank contamination.**SC** Sample condition upon receipt**SD** Serial dilution %D.**SH** Surrogate recovery above quality control limits.**SL** Surrogate recovery below quality control limits.**TB** Trip Blank contamination.

**APPENDIX B**  
**SUMMARY OF VALIDATED DATA**  
**DETECTED ANALYTICAL TEST RESULTS, ANNUAL MONITORING EVENT**  
**YEAR NINE OF THE LONG-TERM PHASE – SMALL FILLS**

**GROUNDWATER DATA**

Summary of Validated Data  
Detected Analytical Results  
Volatile Organic Compounds  
Year Nine of the Long-Term Phase - Small Fills Monitoring Event  
Sharkey Landfill

**Site Area: NWN Fill**

Sample Name: Sample Date:			M-17 4/11/2012		M-18 4/11/2012		M-26 4/12/2012	
Parameter	Units	Well Trigger	Result	Qual	Result	Qual	Result	Qual
cis-1,2-Dichloroethene	ug/L				0.95	J		
Benzene	ug/L	50			0.67	J		
Chlorobenzene	ug/L		2.3	J	17			
1,4-Dichlorobenzene	ug/L							
Total VOCs	ug/L	1,000	2.3		18.62			

**Site Area: NWS Fill**

Sample Name: Sample Date:			M-19A 4/12/2012		M-20 4/12/2012		M-21 4/12/2012		M-22 4/12/2012	
Parameter	Units	Well Trigger	Result	Qual	Result	Qual	Result	Qual	Result	Qual
cis-1,2-Dichloroethene	ug/L									
Benzene	ug/L	50								
Chlorobenzene	ug/L						2.9	J		
1,4-Dichlorobenzene	ug/L						1.8	J		
Total VOCs	ug/L	1,000					4.7			

**Site Area: SW Fill**

Sample Name: Sample Date:			M-23 4/12/2012		M-23FD 4/12/2012		M-24 4/12/2012		M-25 4/12/2012	
Parameter	Units	Well Trigger	Result	Qual	Result	Qual	Result	Qual	Result	Qual
cis-1,2-Dichloroethene	ug/L									
Benzene	ug/L	50								
Chlorobenzene	ug/L									
1,4-Dichlorobenzene	ug/L									
Total VOCs	ug/L	1,000								

Checked by: CMD 7/20/12

Summary of Validated Data  
Detected Analytical Results  
Semivolatile Organic Compounds  
Year Nine of the Long-Term Phase - Small Fills Monitoring Event  
Sharkey Landfill

**Site Area: NWN Fill**

Sample Name:			M-17		M-18		M-26	
Sample Date:			4/11/2012		4/11/2012		4/12/2012	
Parameter	Units	Well Trigger	Result	Qual	Result	Qual	Result	Qual
Bis(2-ethylhexyl) Phthalate	ug/L	100						

**Site Area: NWS Fill**

Sample Name:			M-19A		M-20		M-21		M-22	
Sample Date:			4/12/2012		4/12/2012		4/12/2012		4/12/2012	
Parameter	Units	Well Trigger	Result	Qual	Result	Qual	Result	Qual	Result	Qual
Bis(2-ethylhexyl) Phthalate	ug/L	100								

**Site Area: SW Fill**

Sample Name:			M-23		M-23FD		M-24		M-25	
Sample Date:			4/12/2012		4/12/2012		4/12/2012		4/12/2012	
Parameter	Units	Well Trigger	Result	Qual	Result	Qual	Result	Qual	Result	Qual
Bis(2-ethylhexyl) Phthalate	ug/L	100			3.6	J				

Checked by: CMD 7/20/12

August 2012

Summary of Validated Data  
Detected Analytical Results  
Pesticides/PCBs

943-6198-002

Year Nine of the Long-Term Phase - Small Fills Monitoring Event  
Sharkey Landfill

**Site Area: NWN Fill**

Sample Name:			M-17		M-18		M-26	
Sample Date:			4/11/2012		4/11/2012		4/12/2012	
Parameter	Units	Well Trigger	Result	Qual	Result	Qual	Result	Qual
Endrin Ketone	ug/L		0.032	J				

**Site Area: NWS Fill**

Sample Name:			M-19A		M-20		M-21		M-22	
Sample Date:			4/12/2012		4/12/2012		4/12/2012		4/12/2012	
Parameter	Units	Well Trigger	Result	Qual	Result	Qual	Result	Qual	Result	Qual
Endrin Ketone	ug/L									

**Site Area: SW Fill**

Sample Name:			M-23		M-23FD		M-24		M-25	
Sample Date:			4/12/2012		4/12/2012		4/12/2012		4/12/2012	
Parameter	Units	Well Trigger	Result	Qual	Result	Qual	Result	Qual	Result	Qual
Endrin Ketone	ug/L									

Checked by: CMD 7/20/12



August 2012

Summary of Validated Data  
Detected Analytical Results  
Inorganics

943-6198-002

Year Nine of the Long-Term Phase - Small Fills Monitoring Event  
Sharkey Landfill

Site Area: NWN Fill

		Sample Name:	M-17		M-18		M-26	
		Sample Date:	4/11/2012		4/11/2012		4/11/2012	
Parameter	Unit	Well Trigger	Result	Qual	Result	Qual	Result	Qual
Aluminum	ug/L				1320			
Barium	ug/L	1000	695		148	J	215	
Cadmium	ug/L	10	2.7	J	0.76	J		
Calcium	ug/L		84100		91900		69500	
Chromium	ug/L	50			3.7	J	1.9	J
Cobalt	ug/L		0.71	J	1.8	J	9.1	J
Copper	ug/L		0.86	J	5.1	J	9.4	J
Iron	ug/L		54200		13900		1510	
Lead	ug/L	50	11.8		5.1	J	5.5	J
Magnesium	ug/L		11500		36300		12200	
Manganese	ug/L		209		2350		365	
Nickel	ug/L		4.2	J	5	J	84.6	
Potassium	ug/L		6540	J	7870	J	3860	J
Sodium	ug/L		31400		31300		58900	
Vanadium	ug/L		1.1	J	4.5	J	0.87	J
Zinc	ug/L		5.2	J	10.1	J	269	

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Summary of Validated Data  
Detected Analytical Results  
Inorganics

Year Nine of the Long-Term Phase - Small Fills Monitoring Event  
Sharkey Landfill

## Site Area: NWS Fill

		Sample Name:	M-19A		M-20		M-21		M-22	
		Sample Date:	4/12/2012		4/12/2012		4/12/2012		4/12/2012	
Parameter	Unit	Well Trigger	Result	Qual	Result	Qual	Result	Qual	Result	Qual
Arsenic	ug/L	50					13.6		4.8	J
Barium	ug/L	1000	360		769		207		582	
Cadmium	ug/L	10	0.61	J	1.4	J				
Calcium	ug/L		79700		97100		91000		92900	
Chromium	ug/L	50			2.7	J				
Cobalt	ug/L		1.7	J	6.8	J	1.9	J		
Copper	ug/L						1.9	J	0.87	J
Iron	ug/L		13300		28100		12200		18600	
Lead	ug/L	50	1.6	J	3.6	J	4.3	J	2.2	J
Magnesium	ug/L		26500		35600		24400		28500	
Manganese	ug/L		603		1110		783		549	
Nickel	ug/L		2.6	J	4.2	J	4.3	J	3.6	J
Potassium	ug/L		3910	J	15800	J	33800	J	30000	J
Sodium	ug/L		96800		109000		132000		65400	
Vanadium	ug/L		0.76	J	4.2	J	1.6	J	1.1	J
Zinc	ug/L		1.4	J	2.2	J	2.4	J	2.1	J

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Summary of Validated Data  
Detected Analytical Results  
Inorganics

Year Nine of the Long-Term Phase - Small Fills Monitoring Event  
Sharkey Landfill

## Site Area: SW Fill

		Sample Name: Sample Date:	M-23 4/12/2012		M-23FD 4/12/2012		M-24 4/12/2012		M-25 4/12/2012	
Parameter	Unit	Well Trigger	Result	Qual	Result	Qual	Result	Qual	Result	Qual
Barium	ug/L	1000	371		426		82.8	J	150	J
Calcium	ug/L		72000		81100		97100		70600	
Chromium	ug/L	50	1.3	J	1.8	J				
Cobalt	ug/L		3	J	3.7	J	1.3	J		
Copper	ug/L				0.7	J				
Iron	ug/L		55500		63000		14100		55900	
Lead	ug/L	50	5.5	J	5.7	J	1.7	J	4.8	J
Magnesium	ug/L		24400		27800		7630		19700	
Manganese	ug/L		4630		5230		644		2590	
Nickel	ug/L		1.5	J	1.9	J	11.9	J		
Potassium	ug/L		4300	J	4930	J	2710	J	538	J
Sodium	ug/L		49600		55600		6000		33800	
Vanadium	ug/L		3.2	J	4.2	J	2	J	1.6	J
Zinc	ug/L		1.7	J	1.6	J	245		1.7	J

Checked by: CMD 7/20/12

**SURFACE WATER DATA**

August 2012

Summary of Validated Data  
 Detected Analytical Results  
 Volatile Organic Compounds  
 Year Nine of the Long-Term Phase - Small Fills Monitoring Event  
 Sharkey Landfill

943-6198-002

		Sample Name:	W1(U)		W2(U)		W2(U)FD		W3(D)	
		Sample Date:	4/12/2012		4/12/2012		4/12/2012		4/12/2012	
Parameter	Unit	River Trigger	Result	Qual	Result	Qual	Result	Qual	Result	Qual
Acetone	ug/L		19						25	

		Sample Name:	W4(U)		W5(U/D)		W6(D)	
		Sample Date:	4/12/2012		4/12/2012		4/12/2012	
Parameter	Unit	River Trigger	Result	Qual	Result	Qual	Result	Qual
Acetone	ug/L		18				18	

Checked by: CMD 7/20/12



August 2012

Summary of Validated Data  
Detected Analytical Results  
Semivolatile Organic Compounds  
Year Nine of the Long-Term Phase - Small Fills Monitoring Event  
Sharkey Landfill

943-6198-002

Sample Name:			W1(U)		W2(U)		W2(U)FD		W3(D)	
Sample Date:			4/12/2012		4/12/2012		4/12/2012		4/12/2012	
Parameter	Unit	River Trigger	Result	Qual	Result	Qual	Result	Qual	Result	Qual
Bis(2-ethylhexyl) Phthalate	ug/L				20	J	77	J		

Sample Name:			W4(U)		W5(U/D)		W6(D)	
Sample Date:			4/12/2012		4/12/2012		4/12/2012	
Parameter	Unit	River Trigger	Result	Qual	Result	Qual	Result	Qual
Bis(2-ethylhexyl) Phthalate	ug/L							

Checked by: CMD 7/20/12

## Detected Analytical Results

## Pesticides/PCBs

## Year Nine of the Long-Term Phase - Small Fills Monitoring Event

## Sharkey Landfill

Sample Name:			W1(U)		W2(U)		W2(U)FD		W3(D)	
Sample Date:			4/12/2012		4/12/2012		4/12/2012		4/12/2012	
Parameter	Unit	River Trigger	Result	Qual	Result	Qual	Result	Qual	Result	Qual
No Analytes Detected										

Sample Name:			W4(U)		W5(U/D)		W6(D)	
Sample Date:			4/12/2012		4/12/2012		4/12/2012	
Parameter	Unit	River Trigger	Result	Qual	Result	Qual	Result	Qual
No Analytes Detected								

Checked by: CMD 7/20/12

## Detected Analytical Results

## Inorganics

## Year Nine of the Long-Term Phase - Small Fills Monitoring Event

## Sharkey Landfill

Sample Name: Sample Date:			W1(U) 4/12/2012		W2(U) 4/12/2012		W2(U)FD 4/12/2012		W3(D) 4/12/2012	
Parameter	Unit	River Trigger	Result	Qual	Result	Qual	Result	Qual	Result	Qual
Aluminum	ug/L		210	J	204	J				
Barium	ug/L		35.9	J	35.5	J	35.4	J	35.5	J
Calcium	ug/L		54000		46500		45600		51100	
Copper	ug/L		2.6	J	3.2	J	2.6	J	2.8	J
Iron	ug/L		901		967		868		888	
Lead	ug/L		2.3	J	2.9	J	2.8	J	2.2	J
Magnesium	ug/L		19000		17500		17600		18000	
Manganese	ug/L		153		153		151		153	
Nickel	ug/L		1.1	J	1.2	J	1.3	J	1.6	J
Potassium	ug/L		2670	J	2810	J	2800	J	2790	J
Sodium	ug/L		55900		56200		56300		57700	
Vanadium	ug/L		1.8	J	1.7	J	1.7	J	1.7	J
Zinc	ug/L		6.5	J	94.1	J	16.1	J	6.6	J

Sample Name: Sample Date:			W4(U) 4/12/2012		W5(U/D) 4/12/2012		W6(D) 4/12/2012	
Parameter	Unit	River Trigger	Result	Qual	Result	Qual	Result	Qual
Aluminum	ug/L		232	J	244	J		
Barium	ug/L		35.8	J	36.2	J	34.3	J
Calcium	ug/L		48600		48900		45700	
Copper	ug/L		2.7	J	2.9	J	2.8	J
Iron	ug/L		948		1010		887	
Lead	ug/L		1.9	J	2.1	J	2.2	J
Magnesium	ug/L		18100		18500		17900	
Manganese	ug/L		157		163		146	
Nickel	ug/L		1.2	J	1.4	J	0.95	J
Potassium	ug/L		2840	J	2910	J	2820	J
Sodium	ug/L		58300		58900		57700	
Vanadium	ug/L		1.7	J	2	J	1.6	J
Zinc	ug/L		6.7	J	6.8	J	10.8	J

Checked by: CMD 7/20/12



**APPENDIX C**  
**SUMMARY OF VALIDATED DATA**  
**DETECTED ANALYTICAL TEST RESULTS, ANNUAL MONITORING EVENT**  
**YEAR NINE OF THE PUMP AND TREAT PHASE FOR THE NORTH AND SOUTH FILLS**

August 2012

Summary of Validated Data  
 Detected Analytical Results  
 Volatile Organic Compounds  
 Year Nine of the Pump and Treat Phase - North and South Fills  
 Sharkey Landfill

943-6198-002

Sample Name: Sample Date:			NORTH 4/11/2012		NORTHFD 4/11/2012		SOUTH 6/7/2012	
Parameter	Unit	Well Trigger	Result	Qual	Result	Qual	Result	Qual
Benzene	ug/L	50	19	J	15	J	36	
1,4-Dioxane	ug/L		400	J			180	J
Toluene	ug/L		9.1	J	8.2	J		
Chlorobenzene	ug/L		40	J	38	J	270	
Ethylbenzene	ug/L		19	J	14	J	5.3	J
o-Xylene	ug/L		36	J	40	J	8.1	J
m,p-Xylenes	ug/L		110		120		14	J
1,3-Dichlorobenzene	ug/L						5.9	J
1,4-Dichlorobenzene	ug/L						27	
1,2-Dichlorobenzene	ug/L						50	
Total VOCs	ug/L	1,000	633.1		235.2		596.3	

Checked by: AZ 7/24/12

August 2012

Summary of Validated Data  
 Detected Analytical Results  
 Semivolatile Organic Compounds  
 Year Nine of the Pump and Treat Phase - North and South Fills  
 Sharkey Landfill

943-6198-002

		Sample Name: Sample Date:	NORTH 4/11/2012		NORTHFD 4/11/2012		SOUTH 6/7/2012	
Parameter	Unit	Well Trigger	Result	Qual	Result	Qual	Result	Qual
2-Methylphenol	ug/L				8.1			
4-Methylphenol	ug/L				3.1	J		
2,4-Dimethylphenol	ug/L		20		20			
Naphthalene	ug/L		20		15		6.5	
Caprolactum	ug/L						9.9	
2-Methylnaphthalene	ug/L		4	J	4	J	1.1	J
Biphenyl	ug/L		1.2	J	1.3	J		
N-Nitrosodiphenylamine	ug/L	10	4	J				
Carbazole	ug/L		60				12	
Bis(2-ethylhexyl) Phthalate	ug/L	100	3.8	J	3.6	J	2.8	J

Checked by: AZ 7/24/12

August 2012

Summary of Validated Data  
Detected Analytical Results  
Pesticides/PCBs  
Year Nine of the Pump and Treat Phase - North and South Fills  
Sharkey Landfill

943-6198-002

Sample Name: Sample Date:			NORTH 4/11/2012		NORTHFD 4/11/2012		SOUTH 6/7/2012	
Parameter	Unit	Well Trigger	Result	Qual	Result	Qual	Result	Qual
beta-BHC	ug/L		0.089	R	0.079	R		
Heptachlor Epoxide	ug/L		0.039	J	0.034	J		
4,4-DDE	ug/L		0.029	J				
alpha-Chlordane	ug/L						0.016	J
Aroclor 1242	ug/L		3.6		2.5			
Aroclor 1254	ug/L		1.2		0.8	J		

Checked by: AZ 7/24/12

Summary of Validated Data  
Detected Analytical Results  
Inorganics

Year Nine of the Pump and Treat Phase - North and South Fills  
Sharkey Landfill

Sample Name:			NORTH		NORTHFD		SOUTH	
Sample Date:			4/11/2012		4/11/2012		6/7/2012	
Parameter	Unit	Well Trigger	Result	Qual	Result	Qual	Result	Qual
Aluminum	ug/L		127	J	87.1	J		
Arsenic	ug/L	50	20.8	J	18.7	J	18.4	
Barium	ug/L	1000	480	J	449	J	308	
Beryllium	ug/L		0.55	J	0.51	J		
Calcium	ug/L		59100	J	60400	J	71700	
Chromium	ug/L	50	48.9	J	34	J	11.3	
Cobalt	ug/L		40.4	J	39.4	J	5.2	J
Copper	ug/L		3	J	1.2	J		
Iron	ug/L		17900	J	12100	J	16900	
Lead	ug/L	50	17.4	J	9.4	J	2.6	J
Magnesium	ug/L		51000	J	50500	J	31100	
Manganese	ug/L		342	J	343	J	483	
Nickel	ug/L		270	J	264	J	45.1	
Potassium	ug/L		228000	J	221000	J	62300	
Selenium	ug/L	10	4.6	J	2.8	J		
Sodium	ug/L		961000	J	942000	J	267000	
Thallium	ug/L						5.6	J
Vanadium	ug/L		15.9	J	14.1	J	5.3	J
Zinc	ug/L		42.3	J	24.6	J	8.9	J
Cyanide	ug/L		7.9	J	6.3	J	1.6	J

Checked by: AZ 7/24/12

**APPENDIX D**

**NJDEP HZSITE ELECTRONIC DATA DELIVERABLE, ANNUAL MONITORING EVENT  
YEAR NINE OF THE LONG-TERM PHASE – SMALL FILLS AND YEAR NINE OF THE PUMP  
AND TREAT PHASE FOR THE NORTH AND SOUTH FILLS**

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